COMMISSION DRAFT

TECHNICAL REPORT:

The Costs of Raising Children

October 10, 2000

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Commission Draft

This document is a Commission Draft of the JLARC Technical Report: The Costs of Raising Children. The draft has been assembled for discussion and factual review. Do not quote, publish, or release any material contained in this document, because it is subject to additional verification and editorial review.

Joint Legislative Audit and Review Commission

October 10, 2000

JLARC Technical Report Summary

Child support guidelines in Section 20-108.2 of the *Code of Virginia* are used to calculate the amount of child support a non-custodial parent is required to pay. The guidelines were established to provide those who determine child support awards with a uniform, objective, and economically-based method of establishing fair, adequate, and consistent child support awards. The extent to which existing guidelines are fair and adequate has been the subject of considerable debate.

Section 20-108.2 of the *Code of Virginia* also requires the Secretary of Health and Human Resources to convene a panel to review periodically the child support guidelines. According to the review panel's 1999 report, the panel had concerns regarding the reliability and validity of the data and studies upon which the guidelines were based. Because of these concerns, the panel questioned the equity and validity of the current guidelines, but they felt that no preferable alternative approach was currently available. Therefore, the panel recommended that the current guidelines be retained as an interim decision, but that the General Assembly should authorize and fund a Virginia-specific study of the cost of raising children in "non-intact families," to be used as the basis for the next review of the guidelines.

Senate Joint Resolution 192 of the 2000 General Assembly session was prompted by the review panel's 1999 report. The resolution directs JLARC to "include in its study of child support enforcement an examination of the costs of raising children in Virginia when parents live in separate households." The

resolution further directs JLARC to "develop data that can [be] used to determine appropriate child support amounts."

For the 1999 review panel to obtain fully what it said it wanted in its report, the General Assembly would probably have to spend millions of dollars to collect valid expenditure data, first from a large sample of custodial parents in Virginia, and then to track down the corresponding non-custodial parents to collect valid expenditure data from them. Before embarking on such an ambitious and problematic data collection effort, the General Assembly may first wish to examine first the currently available data more closely, and then to determine whether collecting the additional data is cost-effective. Accordingly, this study focuses on what can be learned from existing data that were recently collected, and how they can be meaningfully applied to the evaluation of Virginia's child support guidelines.

General Approach to Estimating Prevailing Costs of Raising Children

The JLARC staff approach for deriving estimated costs of raising children depends on three key assumptions.

- The cost estimates would be based on empirically observed household expenditures, rather than on a more normative baseline or a prescribed "minimum" cost for raising children.
- A *cost estimating method* is emphasized, because child-rearing expenditure data are often co-mingled with expenditures for the entire household (for example, housing, food, and transportation expenditures).
- It is assumed that there is no one "true cost" of raising children as an absolute dollar amount. Instead, the cost is assumed to vary with household income. Therefore, rather than attempting to develop absolute or constant dollar estimates, JLARC staff estimated the level of expenditures in relation to the level of income.

Given these three assumptions, JLARC staff estimated the prevailing costs of raising children in four basic steps (see figure on page iv).

Step 1. The first step is to observe, in the Consumer Expenditure Survey (CES) data, each individual household's reported expenditures for each of seven cost categories: food, housing, transportation, health care, clothing, child care and education, and miscellaneous costs. The CES data are collected nationwide every year, and are a very comprehensive source of information on household expenditures. The Consumer Expenditure Survey is administered by the Bureau of Labor Statistics of the U.S. Department of Labor. JLARC staff analyzed the most recent version of CES data, which was collected in 1997 and the first quarter of 1998.

The CES is currently the best available source of data on household expenditures for two reasons:

- large sample sizes of households, and
- many comprehensive and in-depth questions regarding household expenditures asked on the survey instrument, that could be difficult to replicate.

Further, the CES data were collected without child support considerations in mind. In contrast, parents who know their reported expenditures may be used in determining child support amounts may feel an incentive to inflate what they report spending on their children, and these self-reported amounts would be difficult to verify or refute. Therefore, the CES data are less likely to reflect this problematic upward bias.

In the sample of CES data used for this study, 7,228 households with

Steps in Estimating the Costs of Raising Children

Step 1:
Observe each household's expenditures in each expense category.

Related Information:
Expenditures are reported in Consumer Expenditure Survey (CES) data. CES data are discussed in the first section of Chapter II.

Step 2:
Determine in each cost category the proportion attributable to children.

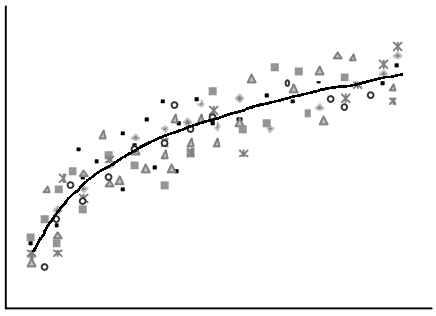
= P[a,b,c,d,e,f,g]

Related Information:
Issues related to this step are discussed in the second section of Chapter II.

Step 3:
In each category, multiply the children's proportion by each household's expenditures, and sum the expenditures on children across all the categories.

Food	**$ = A**	*x*	**P[a]**	**=**	**?**	
Housing	**$ = B**	*x*	**P[b]**	**=**	**?**	
Transportation	**$ = C**	*x*	**P[c]**	**=**	**?**	
Health Care	**$ = D**	*x*	**P[d]**	**=**	**?**	
Clothing	**$ = E**	*x*	**P[e]**	**=**	**?**	
Child Care	**$ = F**	*x*	**P[f]**	**=**	**?**	
Miscellaneous Costs	**$ = G**	*x*	**P[g]**	**=**	**+?**	
					$????	

Step 4:
Estimate prevailing total household expenditures on children.



Related Information:
Prevailing expenditures are derived from regression models using estimated household expenditures on children (Step 3). Issues related to this step are discussed in the last section of Chapter II. Derived functions are listed in Appendix C of this report, and further details are available in a separate technical appendix.

JLARC staff graphic.

children were drawn nationwide, and 150 were identified as being from Virginia. JLARC staff examined these data to see whether there were fundamental differences in total expenditures between Virginia households and those from the rest of the nation. When controlling for family composition (by stratifying according to single-parent versus two-parent households, and number of children), differences in total expenditures between Virginia households and those from the rest of the United States were not statistically significant. Overall, the insignificant differences indicate that even if Virginia-specific data like those in the Consumer Expenditure Survey were collected, the results would not be very different from those based on nationwide data.

Step 2. The second step is attributing the proportion of household expenditures in each cost category (food, housing, transportation, and so on) to the costs of raising children. Several approaches for attributing some proportion of the expenditures to children are available. For some categories (such as child care or clothing), the Consumer Expenditure Survey data are reported separately for children, so that 100 percent of these expenditures may be attributed to children. But for other categories, where the expenditure data (such as for housing and food) are not reported separately by family member, some assumptions must be made regarding what proportion is due to children. The approaches can be characterized as:

- Allocations based on averages calculated for children and adults, from federal studies (such as USDA food plans, or results from the National Medical Expenditure Survey);
- The “per capita” approach, which divides the household expenditures by the number of family members; and

- The "average use" approach, which bases allocations on how much of a certain commodity (such as housing or transportation) households with different numbers of children are observed to use on average, compared to households without children.

A key series of policy decisions must be made regarding whether to apply the per capita approach or else the average use approach to apportioning housing and transportation expenditures to children. Using one approach over another can make a substantial difference on each household's estimated expenditures on children. The advantages and disadvantages of each approach are discussed in Chapter II of this report.

Step 3. The third step is to estimate each household's total expenditures on children. For each cost category, the household expenditures observed in Step 1 is multiplied by the proportion attributable to children (from Step 2). Then the estimated expenditures on children in all seven cost categories are summed for each individual household.

Step 4. In the fourth step, the prevailing level of expenditures on children are estimated in relation to level of household income. Regression models were used to estimate the prevailing levels. Chapter II discusses in more detail the regression modeling.

Estimated Costs of Raising Children in Relation to the Child Support Guidelines

JLARC staff used the data on the estimated expenditures on children in relation to the child support guidelines in two ways. One way emphasized evaluating the existing guidelines, using estimates of individual household expenditures on children. The primary question was: Do the current guidelines

tend to be above or below what most households are estimated to be spending on children? More specifically, what percentage of households has estimated expenditures above the total amount for child support assumed in the current guidelines, and what percentage falls below this amount? The second way was to use the prevailing expenditure estimates, and whatever additional policy decisions would be appropriate, for determining alternative sets of child support guidelines.

Using Estimates to Evaluate the Current Child Support Guidelines. JLARC staff estimated individual household expenditures on children for all seven cost categories. Two major categories (housing and transportation) could be estimated in very different ways. Therefore, JLARC staff generated separate expenditure estimates under four alternative sets of assumptions:

- The per capita (PC) approach was applied to all housing and transportation subcategories.
- The average use (AU) approach was applied to all housing and transportation subcategories.
- The average use approach was applied only to the fixed transportation cost subcategory, and the per capita approach was applied to all other transportation and to all housing subcategories (AU Vehicles).
- The average use approach was applied to the shelter and fixed transportation subcategories, and the per capita approach was applied to all other housing and transportation subcategories (AU Vehicles & Shelter).

As shown in the following table, regardless of how the expenditures were estimated (whether using the per capita or the average use approach), households with gross annual incomes below $30,000 appeared to spend more

Percentage of Husband-Wife Households Estimated to Spend More On Children than Amounts Assumed in Child Support Guidelines

Estimates Based on Per Capita (PC) Assumption

	Number of Children					
Annual Gross Income	**1**	**2**	**3**	**4**	**5**	**6**
Less Than $30,000	93.7%	94.4%	96.8%	92.5%	85.2%	94.1%
$30,000 to 59,999	92.4%	89.6%	87.4%	95.1%	85.3%	92.9%
$60,000 to 89,999	83.1%	85.4%	86.4%	79.5%	100.0%	75.0%
$90,000 or more	87.5%	88.2%	83.3%	88.4%	77.8%	50.0%

Estimates Based on Average Use for Vehicles (AU Vehicles) Assumption

	Number of Children					
Annual Gross Income	**1**	**2**	**3**	**4**	**5**	**6**
Less Than $30,000	92.4%	92.7%	96.0%	90.8%	85.2%	94.1%
$30,000 to 59,999	89.7%	86.1%	83.9%	92.2%	70.6%	92.9%
$60,000 to 89,999	79.8%	81.7%	80.4%	79.5%	90.9%	75.0%
$90,000 or more	85.5%	86.4%	80.2%	88.4%	77.8%	50.0%

Estimates Based on AU Shelter & Vehicles Assumption

	Number of Children					
Annual Gross Income	**1**	**2**	**3**	**4**	**5**	**6**
Less Than $30,000	78.9%	79.0%	87.7%	84.2%	70.4%	88.2%
$30,000 to 59,999	69.8%	68.5%	67.1%	76.5%	58.8%	78.6%
$60,000 to 89,999	56.3%	62.0%	55.4%	61.5%	63.6%	50.0%
$90,000 or more	63.4%	66.9%	61.5%	65.1%	66.7%	50.0%

Estimates Based on Average Use (AU) Assumption

	Number of Children					
Annual Gross Income	**1**	**2**	**3**	**4**	**5**	**6**
Less Than $30,000	63.9%	67.3%	76.2%	73.3%	51.9%	82.4%
$30,000 to 59,999	46.4%	50.4%	42.8%	61.8%	50.0%	71.4%
$60,000 to 89,999	37.3%	43.7%	37.0%	48.7%	36.4%	50.0%
$90,000 or more	43.9%	48.9%	44.8%	44.2%	44.4%	0.0%

Number of Observations Per Cell

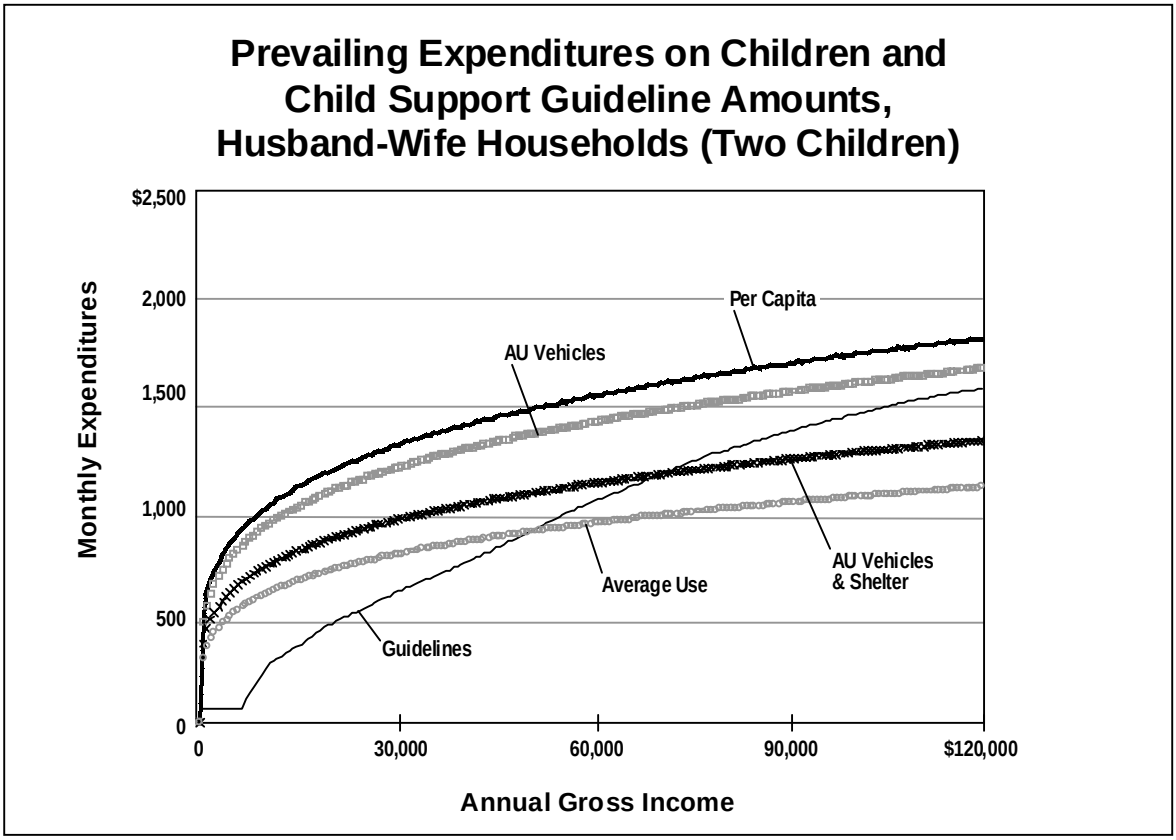
	Number of Children					
Annual Gross Income	**1**	**2**	**3**	**4**	**5**	**6**
Less Than $30,000	474	572	252	120	27	17
$30,000 to 59,999	739	826	404	102	34	14
$60,000 to 89,999	480	487	184	39	11	4
$90,000 or more	303	323	96	43	9	2
Grand Total	1996	2208	936	304	81	37

Source: JLARC staff analysis of: 1997-98 Consumer Expenditure Survey data; and Child Support Guidelines, Section 20-108.2, *Code of Virginia*.

on children than the amounts assumed in the child support guidelines. However, results for households earning more than $30,000 annually depended on what assumption was used to estimate household expenditures on children.

Using Prevailing Estimated Expenditures to Determine Alternative Child Support Guidelines. If a review panel or the General Assembly wishes to determine child support guideline amounts based on more recent expenditure estimates, it could use prevailing expenditure curves, such as those generated in this study. Based on these curves, the alternative estimates of prevailing expenditures on children are shown, in comparison to the current guideline amounts, in Chapter III. (The figure on page x shows an example of the prevailing cost curves generated for households with two children.) However, several policy decisions need to be made regarding: (1) which set of curves to use, and (2) what adjustments could be made to ensure consistency in any guidelines derived from these curves.

Which Set of Curves to Use. Some curves are better to use than others for technical reasons. For example, curves based on husband-wife households, compared to single-parent households, would be based on more complete expenditure and income data. Likewise, curves from husband-wife households with one, two, three, and four children appear to be based on samples of sufficient size to produce stable estimates. However, when comparing the four-children family cost curve with the three-children family curve, inconsistencies between the two (where the three-children curve has higher



amounts than the four-children curve) indicate that basing guidelines on the four-children curve may cause some anomalies to occur.

The remaining question affecting which set of curves to use is essentially a policy question: what estimation method (per capita, average use, or a mix of the two) should be chosen? Prevailing expenditure estimates based on the per capita approach would be substantially higher than the amounts in the current guidelines in all cases. At the same time, those based on the average use approach would generally be substantially higher among households earning less than $30,000, but substantially lower among households earning more than $60,000 per year. The advantages and disadvantages of applying the per capita

versus the average use approach to each housing and transportation subcategory may need to be considered in making such a policy decision.

Adjustments to Promote Consistency in Guidelines. Consistency in the guidelines means that: (1) guideline amounts should not decrease as income increases; and (2) guideline amounts should not decrease as the number of children increases. Empirically-based curves for households with one, two or three children would result in consistent guidelines, but curves from those with four, five or six children would not. Therefore, an adjustment would need to be made as a policy decision in order to have guidelines for four-, five-, and six-children households that are consistent with each other and with guidelines for households with fewer children.

One way of making such an adjustment would be to use the three-children household curve as a baseline, and adjust it upward by a fixed proportion for four-children households, and by another (higher) proportion for five-children households, and by another (yet higher) proportion for six-children households. This approach is used in the current guidelines (with some exceptions), in which the proportions are: .1274 for four-children households, .2293 for five-children households, and .3142 for six-children households. However, proportions other than the ones used by the current guidelines could serve as the basis for the adjustment instead.

Conclusions

Senate Joint Resolution 192 directed JLARC to examine “the costs of raising children in Virginia when parents live in separate households,” and to

"develop data that can [be] used to determine appropriate child support amounts." After analyzing currently available nationwide data on household expenditures (including data from single-parent households), JLARC staff conclude that it would not be cost-effective for the General Assembly to attempt a new, Virginia-specific data collection effort. Such an attempt to replicate the nationwide data within Virginia would be very expensive and problematic. Further, even if Virginia-specific data were collected, the results would probably not be significantly different from those based on nationwide data.

JLARC staff used nationwide data to examine estimated expenditures on children in single-parent households, in comparison to husband-wife households. Overall, when controlling for income level, single-parent households were not found to have expenditure levels that were vastly different from husband-wife households. In some cases (such as one-child or two-children households), the level of spending in single-parent households was somewhat higher, when in other cases (such as three-children households) it was somewhat lower.

However, a more solid case can be made for basing Virginia child support guidelines on estimated expenditures from husband-wife households than from single-parent households. One reason is that husband-wife households appear to report more complete information regarding total expenditures and income from both parents, when the data may not be as complete from single (custodial) parent households. Another reason is that basing guidelines on husband-wife household data would be more consistent

with Virginia's existing policy, which uses an income-shares approach for determining child support payments.

JLARC staff demonstrated how data used to estimate expenditures on children could be used to evaluate the current guidelines or to help determine new, alternative guidelines. Three findings from this analysis appear to be particularly salient.

- Among households earning less than $30,000 annually, estimated spending on children generally appears to exceed the amounts that are in the current guidelines.
- A key policy decision affecting the expenditure estimates is whether housing and transportation costs should be attributed to children on the basis of the per capita or the average use approach (or some combination of the two).
- Having a set of expenditure estimates alone would not be sufficient to determine appropriate child support amounts, because there is a need for additional policy decisions and adjustments to be made as well. However, using expenditure estimates as one of many components may help ensure that child support amounts realistically reflect the costs of raising children.

Recommendation (1). **The Commonwealth of Virginia should not initiate a new, Virginia-specific data collection effort on the costs of raising children. Instead, future Child Support Guideline Review Panels should use data collected from the most recent Consumer Expenditure Survey from the Bureau of Labor Statistics of the U.S. Department of Labor.**

Recommendation (2). **The Secretary of Health and Human Resources should direct the next Child Support Guideline Review Panel to include the following points in its deliberations when it considers the costs of raising children in evaluating or revising the guidelines. (a) It should consider basing Virginia child support guidelines on estimated expenditures from husband-wife households rather than from single-parent households. (b) It should consider whether the guidelines for families earning a combined gross income of less than $30,000 annually should be increased. (c) When estimating expenditures on children, it should consider whether housing and transportation costs should be attributed to children based on the per capita or the average use approach (or some combination of the two).**

Recommendation (3). **The Secretary of Health and Human Resources should direct the next Child Support Guideline Review Panel to consider what policy decisions or adjustments should be made in addition to expenditure estimates to determine appropriate child support amounts.**

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I. Introduction

Numerous divorces involve families with children. Recent estimates suggest that one quarter of the nation's children will spend some time in single-parent families due to divorce. Research has also shown that parents and their children generally experience a decrease in living standards after a divorce. Using a range of methods and data sets, several studies have suggested that the financial impacts of divorce are not equally distributed among custodial and non-custodial parents. Custodial parents were shown to experience declines in economic wellbeing, while non-custodial parents tended to experience smaller losses in economic wellbeing. Child support payments are one means of offsetting these uneven financial impacts on children and custodial parents.

Child support guidelines are used to calculate the amount of child support a non-custodial parent is required to pay. The guidelines were established to provide those who determine child support awards with a uniform, objective, and economically based method of establishing fair, adequate, and consistent child support awards. The extent to which existing guidelines are fair and adequate has been the subject of considerable debate.

Due to concerns raised regarding the guidelines, JLARC was directed by Senate Joint Resolution 192 of the 2000 General Assembly Session: (1) to examine "the costs of raising children in Virginia when parents live in separate households;" and (2) to "develop data that can [be] used to determine appropriate child support amounts."

FEDERAL LAW REGARDING CHILD SUPPORT AWARDS

Prior to 1984, states and localities permitted child support awards on a case by case basis subject to judicial discretion. In 1984, the federal government required states to develop advisory, income-based guidelines to be used in determining child support levels. In 1988, the Family Support Act required that states develop presumptive guidelines within one year. Judges were required to provide written documentation if they depart from these guidelines. In response, states use one of three approaches for developing child support guidelines: percent-of-income, income shares, and the "Melson model."

The most common approaches to child support used in the U.S. are the percent-of-income guideline and the income-shares guideline. The percent-of-income guideline specifies child support as a percentage of the non-custodial parent's income, varying with the number of children involved. It does not consider income earned by the custodial parent. The income-shares guideline (used by Virginia) specifies child support as a percentage of combined non-custodial and custodial incomes, varying with the number of children. The resulting obligation is prorated between parents according to their share of combined income.

The percent-of-income approach is used in 13 states and territories. The income-shares approach is used in 37 states and territories, including Virginia. Three states use the "Melson model," a modified income-shares model which incorporates several public policy judgments designed to ensure that each parent's basic needs are met in addition to the children's. Many states with income-shares and Melson models permit certain deviations from the basic child

support calculation. These deviations provide for health care, childcare and private education.

States and territories throughout the United States develop guidelines in a number of ways. In 25 states and the District of Columbia, the legislature adopts guidelines through statute. Virginia is among these 25 jurisdictions. In 18 states and territories, the courts adopt guidelines. In nine states, an executive agency, usually the state child support agency, adopts guidelines through administrative rule. Twelve states and territories set guidelines through an independent commission.

Since 1989, there has been little consensus on which economic model is most accurate. Consequently, states have generally maintained the system they first adopted, some making small adjustments for increases in the cost of living or for regional differences in the cost of living. In addition, the political controversy of payment guidelines has resulted in a lack of the political consensus needed to make changes.

VIRGINIA'S RESPONSE TO FEDERAL LAW

Virginia's response to the federal mandate is found in §20-108.1 and 108.2 of the *Code of Virginia*. The *Code* sets guidelines for determining child or spousal support and the guidelines for determining child support. This section also contains the guidelines schedule, a table used for calculating monthly payments based on family income. As shown in Appendix B, given the gross monthly income of both parents and the number of children, the table determines monthly total child support amounts to be provided by both parents. Deviations

from the amounts shown in the table may occur based on extenuating circumstances, as required by federal law. A considerable body of case law addresses the circumstances when there are material differences between the actual facts of a given case and the guideline assumptions.

In response to federal law, subsection H of §20-108.2 of the *Code of Virginia* requires the Secretary of Health and Human Resources to convene a panel to review periodically the child support guidelines set out in that section. States must also examine current economic data to ensure that the awards meet the children's needs. The 2000 General Assembly session amended the *Code* to shorten the review period from four to three years.

According to the 1999 report of the review panel, Virginia's guidelines are based on an income-shares model, which considers the combined gross income of both parents, and sets each parent's share according to that parent's proportion of total gross income. This model is based on the assumption that the child should receive the same proportion of parental income that he or she would have received if the parents lived together. According to the report, data for the guidelines are "based on national studies, some of them rather old, of the costs associated with rearing children in intact families." Virginia's current guidelines were developed by Policy Studies, Inc. The review panel concluded that, of available methods, the income-shares approach remains valid, although the panel had concerns regarding the reliability and validity of the data and studies upon which the guidelines were based.

According to the review panel report, the data concerns are:

- they are based on expenditures in "intact" (two-parent) households, rather than in "non-intact" households; and
- the data are more than a decade old and are not specific to Virginia, but based on national estimates.

Because of these concerns, the panel questioned the equity and validity of the current guidelines, but they felt that no preferable alternative approach was currently available. Therefore, the panel recommended that the current guidelines be retained as an interim decision, but that the General Assembly should authorize and fund a Virginia-specific study of the costs of raising children in "non-intact families," to be used as the basis for the next review of the guidelines. This recommendation ultimately led to the mandate for this JLARC study.

JLARC REVIEW

Senate Joint Resolution 192 of the 2000 General Assembly session was prompted by the most recent review panel's report. The resolution directs JLARC to "include in its study of child support enforcement an examination of the costs of raising children in Virginia when parents live in separate households." As shown in Appendix A, the resolution further directs JLARC to "develop data that can [be] used to determine appropriate child support amounts."

For the 1999 review panel to obtain fully what it said it wanted in its report, the General Assembly would probably have to spend millions of dollars to collect valid expenditure data, first from a large sample of custodial parents in Virginia, and then to track down the corresponding non-custodial parents to collect valid expenditure data from them. Before embarking on such an

ambitious and problematic data collection effort, the General Assembly may wish to examine first the available existing data more closely, and then to determine whether collecting the additional data is cost-effective. Accordingly, this study focuses on what can be learned from existing data that were recently collected, and how they can be meaningfully applied to the evaluation of Virginia's child support guidelines. As a result, research activities for this study primarily entailed data analysis and document reviews.

Data Analysis

JLARC staff analyzed three sets of data for this study: (1) the Consumer Expenditure Survey; (2) the American Housing Survey; and (3) the National Personal Transportation Survey.

Consumer Expenditure Survey. Every year, a very comprehensive source of information on household expenditures is collected nationwide: the Consumer Expenditure Survey (CES), which is administered by the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor. JLARC staff analyzed the most recent version of CES data, which was collected in 1997 and the first quarter of 1998.

The CES sample across all quarters consists of 27,797 observations. Approximately 20 percent of these households (or 5,562 observations) are husband-wife households with children, and approximately 6 percent (or 1,666 observations) are single-parent households with children. The sample includes 116 husband-wife households and 34 single-parent households identified as

being from Virginia. (Chapter II compares the expenditures of Virginia-specific households with those of households from across the nation.)

The CES is currently the best available source of data on household expenditures for two reasons:

- large sample sizes of households, and
- many comprehensive and in-depth questions regarding household expenditures asked on the survey instrument, that could be difficult to replicate.

Further, the CES data were collected without child support considerations in mind. In contrast, parents who know their reported expenditures may be used in determining child support amounts may feel an incentive to inflate what they report spending on their children, and these self-reported amounts would be difficult to verify or refute. Therefore, the CES data are less likely to reflect this problematic upward bias.

American Housing Survey. The American Housing Survey is collected by the U.S. Department of Housing and Urban Development. It includes data on apartments, single family homes, mobile homes, family composition, income, housing and neighborhood quality, housing costs, equipment, fuels, size of housing unit, and recent movers. The sample is collected every other year from a fixed sample of about 50,000 housing units, plus new construction each year.

National Personal Transportation Survey. This survey has been conducted by the Federal Highway Administration of the U.S. Department of Transportation, and has most recently been collected in 1995. The sample size is approximately 21,000. The sample includes information on the number of trips

taken by a household, the number of vehicles owned, the number of drivers, and income.

Document Reviews

Three documents played a key role in this study. They were: (1) the USDA's *Expenditures on Children by Families 1999 Annual Report*; (2) Official USDA Food Plans; and (3) *Trends in Personal Health Care Expenditures, Health Insurance, and Payment Sources, Community-Based Population, 1996-2005* by the Agency for Health Care Policy and Research.

Expenditures on Children by Families 1999 Annual Report. Each year since 1960, the United States Department of Agriculture (USDA) has estimated annual expenditures on children from birth through age 17. The most recent version of these estimates is in the 1999 Annual Report. Data used for the most recent estimates are from the 1990-92 BLS Consumer Expenditure Survey. The 1990-92 CES data are updated to current dollars using the Consumer Price Index.

While this report provided much useful information on how USDA staff estimated expenditures on children, there were five reasons why JLARC staff did not use the USDA estimates themselves, but rather derived estimates directly from the basic source data (the BLS Consumer Expenditure Survey).

1. The USDA cost estimates were stratified into three income groups (high, middle, and low), which may be too crude for evaluating or determining child support guidelines. The current Virginia guidelines have child support amounts varying by 50 dollar increments in combined gross monthly income, using over 190 income strata.

2. The USDA cost estimates could be adjusted for one, two, or three or more children, based on regression coefficients. But this adjustment process

seemed overly complex, cumbersome, and constraining on estimates derived from the data, compared to a more stratified approach (which analysis of the CES data could accommodate). Further, the category of three or more children appeared to be too broad for Virginia child support guidelines (which currently have the child support amounts specified for categories of one, two, three, four, five, and six or more children).

3. The USDA cost estimates were stratified by age groups of the children. In contrast, child support guidelines in Virginia currently average across age groups. Explicitly adjusting for age groups could add considerable complexity in deriving child support amounts, especially for combinations of two or more children in a particular family.

4. The most recent USDA estimates (from the 1999 report) were based on 1990-92 CES data and inflated using the Consumer Price Index, rather than the most recent CES data from 1997-98.

5. Directly analyzing CES data allowed JLARC staff to analyze alternative approaches for apportioning certain categories of household expenditures (specifically, housing, transportation, clothing, and miscellaneous costs) to children, in ways that are different from the approaches used by the USDA.

Official USDA Food Plans. Information from USDA food plans was used to allocate food expenses among family members. These plans were derived from a national food consumption survey, and show the share of food expenses attributable to individual family members. These food budget shares of family members were applied to household food expenditures to determine food expenses of children in the household.

Trends in Personal Health Care Expenditures, Health Insurance, and Payment Sources, Community-Based Population, 1996-2005. The Agency for Health Care Policy and Research of the U.S. Department of Health and Human Services reported average health care expenditures for children and for adults in this document, projected to the year 2005. These health care expenses are based on data from the National Medical Expenditure Survey.

From these averages, JLARC staff derived the proportion of household health expenditures attributable to children.

REPORT ORGANIZATION

This chapter has provided background information on child support and some discussion of the JLARC review.

Chapter II focuses on *how* the costs of raising children are estimated in this study. It first describes the expenditure data (from the Consumer Expenditure Survey) on which the estimates are based, and it shows that when the distribution of Virginia household expenditure data was compared with that from the rest of the U.S., no significant differences were found when controlling for family composition. The chapter discusses the methods for attributing household expenditures to children, in each of seven cost categories (food, housing, transportation, health care, clothing, childcare and education, and miscellaneous costs). And Chapter II describes how regression techniques are used to determine prevailing levels of expenditures on children in relation to level of income.

Chapter III focuses on the *results* of this cost estimating analysis. It presents different types of cost curves that could be used to represent prevailing expenditures on children for different types of households. The chapter also addresses how cost estimates for individual households can be used to evaluate child support amounts in the current child support guidelines. Further, the chapter demonstrates how prevailing cost estimates could be used to determine child support guidelines.

II. General Approach to Estimating Prevailing Costs of Raising Children

The JLARC staff approach for deriving estimated costs of raising children depends on three key assumptions. One is that the cost estimates would be based on empirically observed household expenditures, rather than on a more normative baseline or a prescribed "minimum" cost for raising children. The second assumption is that a *cost estimating method* is emphasized, because child-rearing expenditure data are often co-mingled with expenditures for the entire household (for example., housing, food, and transportation expenditures).

Third, it is assumed that there is no one "true cost" of raising children as an absolute dollar amount. Instead, the cost is assumed to vary with household income. This association makes intuitive sense, because asking adults how much they spend on their children would be like asking them how much they spend on themselves: the answer would depend on how much income they have available. Therefore, rather than attempting to develop absolute or constant dollar estimates, JLARC staff estimated the level of expenditures in relation to the level of income.

JLARC staff estimated the prevailing costs of raising children in four basic steps (Figure 1). The first step is to observe, in the Consumer Expenditure Survey data, each individual household's reported expenditures for each of seven cost categories: food, housing, transportation, health care, clothing, child care and education, and miscellaneous costs. The first section of this chapter provides more information on the primary data set used in this study.

Figure 1

Steps in Estimating the Costs of Raising Children

Step 1:
Observe each household's expenditures in each expense category.

Related Information:
Expenditures are reported in Consumer Expenditure Survey (CES) data. CES data are discussed in the first section of this chapter.

Step 2:
Determine in each cost category the proportion attributable to children.

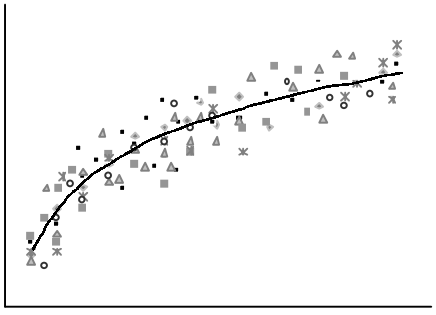
= P[a,b,c,d,e,f,g]

Related Information:
Issues related to this step are discussed in the second section of this chapter.

Step 3:
In each category, multiply the children's proportion by each household's expenditures, and sum the expenditures on children across all the categories.

Food	**$ =**	**A**	*x*	**P[a]**	**=**	**?**
Housing	**$ =**	**B**	*x*	**P[b]**	**=**	**?**
Transportation	**$ =**	**C**	*x*	**P[c]**	**=**	**?**
Health Care	**$ =**	**D**	*x*	**P[d]**	**=**	**?**
Clothing	**$ =**	**E**	*x*	**P[e]**	**=**	**?**
Child Care	**$ =**	**F**	*x*	**P[f]**	**=**	**?**
Miscellaneous Costs	**$ =**	**G**	*x*	**P[g]**	**=**	**+?**
						$????

Step 4:
Estimate prevailing total household expenditures on children.



Related Information:
Prevailing expenditures are derived from regression models using estimated household expenditures on children (Step 3). Issues related to this step are discussed in the last section of this chapter. Derived functions are listed in Appendix C of this report, and further details are available in a separate technical appendix.

JLARC staff graphic.

The second step is to attribute the proportion of household expenditures in each cost category to the costs of raising children. In Step 2, each cost category had its own unique set of assumptions for determining the proportions attributable to children. The assumptions behind these proportions are presented in the second section of this chapter.

The third step is to estimate each household's total expenditures on children. For each cost category, the household expenditures observed in Step 1 are multiplied by the proportion attributable to children (from Step 2). Then the estimated expenditures on children in all seven cost categories are summed for each individual household.

In the fourth step, the prevailing level of expenditures on children are estimated in relation to the level of household income. Regression models were used to estimate the prevailing levels. The final section of this chapter discusses further the use of regression in this study.

DATA USED TO ESTIMATE HOUSEHOLD EXPENDITURES

The primary database used to estimate household expenditures in this study is the 1997-98 Consumer Expenditure Survey – Interview portion. This survey collects information on characteristics and income, as well as expenditures, of households. It is collected by the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor. The 1997-98 Consumer Expenditure Survey interviewed each quarter about 5,500 households, for five quarters (from the first quarter of 1997 to the first quarter of 1998). The total number of households surveyed is 27,797.

From these households, husband-wife and single-parent families were included in this study if: (1) they reported having at least one child of their own under age 18 living in the household; and (2) they reported some positive amount of household income for the past year. As a result, the sample used in this study consisted of 5,562 husband-wife households and 1,666 single-parent households.

The BLS Consumer Expenditure Survey is a very comprehensive source of information on household expenditures that was collected nationwide. Attempting to duplicate such a survey, specific to Virginia alone, would be very expensive, because of the large sample size and the extensive survey questions asked each respondent. Therefore, a reasonable question to ask is whether the nationwide distribution of household expenditures appears to be significantly different from Virginia household expenditures. If there is no significant difference in the distributions, then findings from analysis of the nationwide data could meaningfully apply to Virginia households.

Comparing Nationwide Household Expenditures with Virginia-Specific Data. In the sample used for this study, of the 7,228 households with children that were drawn nationwide, 150 were identified as being from Virginia. JLARC staff examined these data to see whether there were fundamental differences in total expenditures between Virginia households and those from the rest of the nation. When controlling for family composition, differences in total expenditures between Virginia households and those from the rest of the United States were not statistically significant.

As shown in Table 1, the sample was stratified according to single-parent versus two-parent households and number of children. These strata were used because subsequent data analysis would use the same strata to control for family composition. Because the number of observations from Virginia in single-parent household strata was relatively low (34), the results from aggregating these observations across single-parent household strata are shown in Table 1, although similar t-tests with the data fully stratified were also statistically insignificant.

Table 1 shows that the mean total expenditures of Virginia households often tended to be higher than the mean from non-Virginia households. But when taking the distribution (including the spread) of expenditures into consideration, the differences were not statistically significant. This situation is best illustrated by comparing the distribution of single-parent household expenditures from Virginia with that from the rest of the nation. Figure 2 illustrates how the Virginia household expenditures may tend to be somewhat higher on average, but the distribution does not appear to be significantly different from that of the rest of the United States.

This result is not surprising, considering per-capita income and the cost of living in Virginia compared with the rest of the nation. Given that household expenditures are fairly strongly associated with household income, per-capita income in Virginia averaged $26,109 in 1997, when nationally it

Table 1

Statistical Tests for Differences in Quarterly Total Expenditures Between Virginia and Non-Virginia Households

Single-Parent Households

	n	Mean	Std Dev	T statistic	Signif. level
Virginia	34	6484.2	4920.9		
Non-Virginia	1632	6303.6	5972.7		
				-0.1751	0.8610

Husband-Wife Households – One Child

	n	Mean	Std Dev	T statistic	Signif. level
Virginia	47	13656.3	9729.4		
Non-Virginia	1949	11379.0	7377.6		
				-1.5937	0.1178

Husband-Wife Households – Two Children

	n	Mean	Std Dev	T statistic	Signif. level
Virginia	44	12581.6	8005.2		
Non-Virginia	2164	11291.9	7504.4		
				-1.1270	0.2599

Husband-Wife Households – Three Children

	n	Mean	Std Dev	T statistic	Signif. level
Virginia	23	12588.5	4682.1		
Non-Virginia	913	11142.6	7966.2		
				-1.4287	0.1662

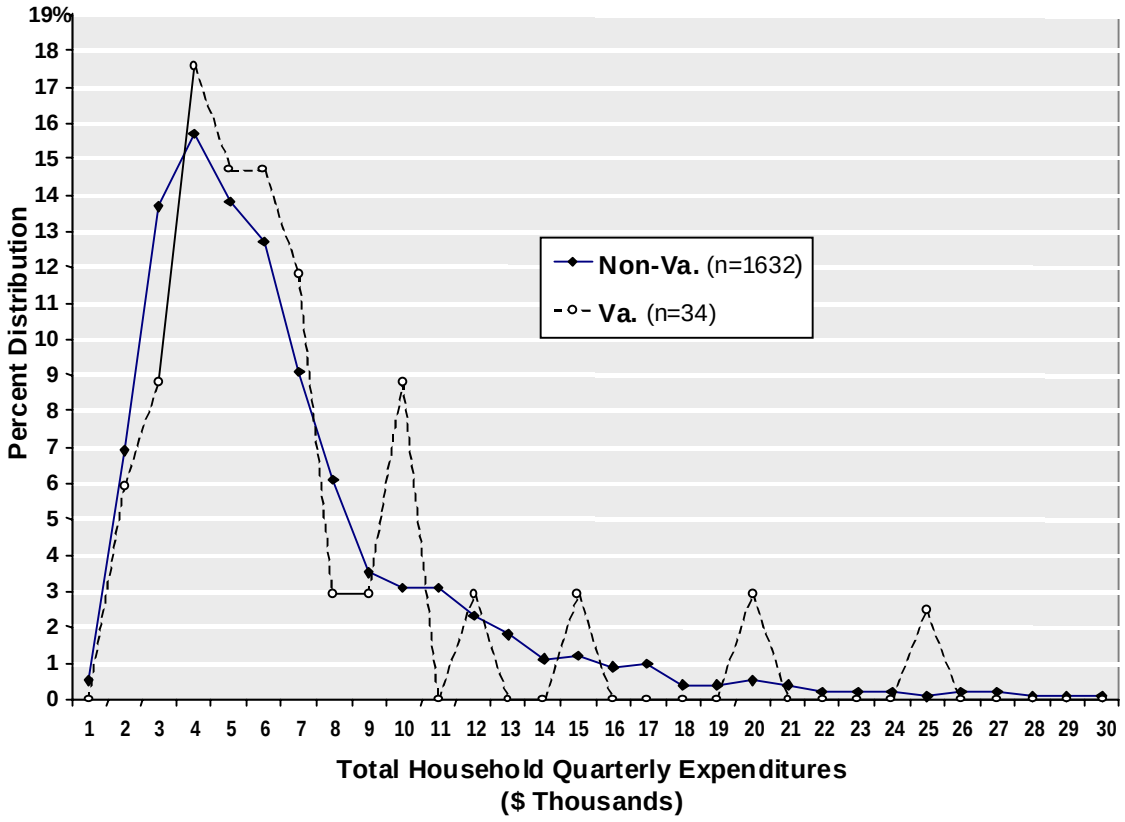
Husband-Wife Households – Four Children

	n	Mean	Std Dev	T statistic	Signif. level
Virginia	2	10335.4	5074.4		
Non-Virginia	302	10954.8	6895.2		
				0.1267	0.8992

Source: JLARC staff analysis of 1997-98 BLS Consumer Expenditure Survey data.

Figure 2

Expenditure Level Distributions Compared:
Non-Virginia *vs.* Virginia Single-Parent Households with Children



Source: JLARC staff analysis of 1997-98 Consumer Expenditure Survey data.

averaged $25,288. However, there were wide variations within the State, ranging from $15,114 in Lee County in Southwestern Virginia to $43,676 in Alexandria in Northern Virginia.

Likewise, Virginia's cost of living is above the national average in some regions, and below in others. The cost of living index used by the *Statistical Abstract of the U.S.* is standardized at 100, to represent the nationwide cost of living. Some regions in Virginia are above the national average: the Northern Virginia Metropolitan Statistical Area (MSA) has an index of 121.7, and the

Richmond MSA has an index of 105.9. Forty-four percent of the State's population lives in these two MSAs. Other regions in Virginia are below the national average: the Norfolk MSA has an index of 97.3, the Roanoke MSA an index of 95.5, and the Bristol MSA an index of 85.1. Approximately 27 percent of the State's population resides in these three MSAs, with the remaining 29 percent residing outside the State's five largest MSAs.

Overall, the insignificant differences indicate that even if Virginia-specific data like those in the Consumer Expenditure Survey were collected, the results would not be very different from those based on nationwide data.

ATTRIBUTING PROPORTION OF HOUSEHOLD EXPENDITURES TO RAISING CHILDREN

The second step in estimating prevailing child-rearing expenses is to examine the intra-household distribution of expenditures in each of the seven budget categories: child care and education, clothing, food, health care, housing, transportation, and other miscellaneous costs. Several approaches for attributing some proportion of the expenditures to children are available. For some categories (such as child care or clothing), the Consumer Expenditure Survey data are reported separately for children, so that 100 percent of these expenditures may be attributed to children. But for other categories, for which the expenditure data (such as for housing and food) are not reported separately by family member, some assumptions must be made regarding what proportion is due to children. The approaches can be characterized as:

- Allocations based on averages calculated for children and adults, from federal studies (such as USDA food plans, or results from the National Medical Expenditure Survey);

- The “per capita” approach, which divides the household expenditures by the number of family members;
- The “marginal cost” approach, which attempts to measure the expenditures on children as the difference in expenses between households with children and equivalent childless households; and
- The “average use” approach, which bases allocations on how much of a certain commodity (such as housing or transportation) households with different numbers of children are observed to use on average, compared to households without children.

Three of these four approaches are used in this study. The “marginal cost” approach is not used, because it depends heavily on the development of an equivalency measure (for determining equivalent households with and without children), but existing measures are problematic. One proposed measure assumes that if two households spend an equal percentage of their total expenditures on food, they are equally well off. Another proposed measure assumes that two households are equally well off if they are spending the same proportion of income on savings and “adult” luxuries (namely, alcohol, tobacco, entertainment, and sweets). Both measures have major problems in credibly representing households that are equivalently well off economically.

A separate set of assumptions applies to each of the following cost categories: (1) food, (2) housing, (3) transportation, (4) health care, (5) clothing, (6) child care and education, and (7) miscellaneous costs.

Food

Total prevailing household food expenditures were estimated from the Consumer Expenditure Survey (CES) data. The method for apportioning the

share of these household food expenditures to the children was based on U.S. Department of Agriculture (USDA) food plans.

The USDA Center for Nutrition Policy and Promotion generates and revises its food plans, to serve as a national standard for a nutritious diet at various levels of cost, and as the basis for food stamp allotments. The plans are based on data from the 1989-91 Continuing Survey of Food Intakes by Individuals, and national average food prices. They also incorporate the 1989 Recommended Dietary Allowances, the 1995 *Dietary Guidelines for Americans,* and the Food Guide Pyramid serving recommendations.

Monthly estimated food costs from the February 2000 Official USDA Food Plans are shown in Table 2. The USDA estimated four levels of costs of food (Thrifty, Low-Cost, Moderate-Cost, and Liberal Plans), for different age and gender groups. As shown in Table 2, the monthly food costs for children were averaged across age and gender.

These estimated monthly costs were used to calculate the proportion of household food expenditures that could be attributed to children. For example, in a husband-wife household with two children, the Moderate-Cost plan monthly costs would be $198.00 for the husband, $169.00 for the wife, and $153.85 for each of the two children. The food costs attributed to the children would be $307.70 out of a total of $674.70 for the household, or a 0.456 share. All other proportions shown in Table 3 were calculated in a similar way. Table 3 shows

Table 2

Official USDA Food Plans: Estimated Monthly Costs

	Thrifty Plan		Low-Cost Plan		Moderate-Cost		Liberal Plan	
	Male	Female	Male	Female	Male	Female	Male	Female
CHILD Age								
1	67.60	67.60	83.20	83.20	97.90	97.90	118.70	118.70
2	67.60	67.60	83.20	83.20	97.90	97.90	118.70	118.70
3	73.20	73.20	91.40	91.40	112.30	112.30	135.60	135.60
4	73.20	73.20	91.40	91.40	112.30	112.30	135.60	135.60
5	73.20	73.20	91.40	91.40	112.30	112.30	135.60	135.60
6	90.60	90.60	121.30	121.30	151.20	151.20	175.90	175.90
7	90.60	90.60	121.30	121.30	151.20	151.20	175.90	175.90
8	90.60	90.60	121.30	121.30	151.20	151.20	175.90	175.90
9	107.90	107.90	137.40	137.40	175.50	175.50	203.70	203.70
10	107.90	107.90	137.40	137.40	175.50	175.50	203.70	203.70
11	107.90	107.90	137.40	137.40	175.50	175.50	203.70	203.70
12	110.90	111.40	155.10	133.90	192.80	162.50	226.20	196.30
13	110.90	111.40	155.10	133.90	192.80	162.50	226.20	196.30
14	110.90	111.40	155.10	133.90	192.80	162.50	226.20	196.30
15	114.40	111.40	159.90	133.90	199.30	162.50	230.10	196.30
16	114.40	111.40	159.90	133.90	199.30	162.50	230.10	196.30
17	114.40	111.40	159.90	133.90	199.30	162.50	230.10	196.30
18	114.40	111.40	159.90	133.90	199.30	162.50	230.10	196.30
Average:	96.41		124.32		153.85		181.64	
ADULT	122.60	110.90	156.60	138.70	198.00	169.00	240.00	216.70

Source: *Official USDA Food Plans: Cost of Food at Home at Four Levels, U.S. Average, February 2000*.

that the proportions do not vary greatly across plans. The average of the proportions across the plans was the number that was multiplied with the household food expenditures to derive the food expenditures on children.

Table 3

Proportion of Food Expenditures Attributable to Children

Husband-Wife Households

Number of Children	Thrifty Plan	Low-Cost Plan	Moderate-Cost Plan	Liberal Plan	Average Across Plans
1	0.292	0.295	0.295	0.285	0.292
2	0.452	0.455	0.456	0.443	0.452
3	0.553	0.556	0.557	0.544	0.553
4	0.623	0.626	0.626	0.614	0.622
5	0.674	0.676	0.677	0.665	0.673
6	0.712	0.715	0.716	0.705	0.712

Single-Parent Households

Number of Children	Thrifty Plan	Low-Cost Plan	Moderate-Cost Plan	Liberal Plan	Average Across Plans
1	0.465	0.473	0.477	0.456	0.468
2	0.635	0.642	0.645	0.626	0.637
3	0.723	0.729	0.732	0.715	0.725
4	0.777	0.782	0.785	0.770	0.778
5	0.813	0.818	0.820	0.807	0.814
6	0.839	0.843	0.845	0.834	0.840

Source: JLARC staff analysis of data from *Official USDA Food Plans: Cost of Food at Home at Four Levels, U.S. Average, February 2000*.

Housing

Housing expenditures on children were estimated for four subcategories of housing costs: shelter, utilities, household operations, and household equipment and furnishings. There were several difficulties in assigning these costs to the children in the family. One difficulty is that housing is consumed in discrete units. For example, among two-parent families, there is generally a single house or apartment for each family. Families do not, in general, build additional dwellings that can be unambiguously assigned to

children added to the family. Another difficulty is that housing is a shared good, so it is consumed in common. All members of the family use the house. Accordingly, there are portions of the house (such as living rooms, kitchens, furniture, utilities) that all family members use. Many of these items are purchased whether or not there are children in the household.

Accordingly, JLARC staff needed a method for identifying what fraction of housing is being used because there are children in the household. Two methods were examined: the "per capita" approach, and the "average use" approach. These two approaches differ in their fundamental assumptions regarding how housing costs should be attributed to children. As a consequence, their use will produce different estimates of the housing expenditures on children.

Per Capita Approach. The USDA has used this approach to estimate housing expenditures on children in past studies. The per capita approach is based on dividing all housing expenditures in a subcategory by the number of people in the household. Under this approach, the percentages of housing expenditures that would be attributable to children are shown in Table 4. The fundamental assumption of the per capita approach is that every member of the household shares equally in the resource (in this case, housing). As the number of children in a household increases, and other factors such as income are held constant, the given amount of housing stock may be used more intensively. There may be more people using the same quantity of space.

Table 4

Per Capita Approach:
Percentage of Expenditures Attributable to Children

Number of Children	One Adult	Two Adults
1	50.0	33.3
2	66.7	50.0
3	75.0	60.0
4	80.0	66.7
5	83.3	71.4
6+	85.7	75.0

Source: JLARC staff analysis

To identify the share of housing "used" by children, and by implication the share of housing costs to attribute to them, the per capita approach assumes that each child is responsible for, or generates, an equal part of housing costs. The per capita approach implies that each person, adult or child, "uses" the same amount of housing. Consequently, as the number of children increases, the proportion of expenditures on housing attributed to children increases, while the proportion of expense attributed to adults decreases.

The per capita approach has its advantages. First, it is a simple matter to divide total housing costs by the number of people in the house, and then multiply that number by the number of children present. Given the difficulty of analyzing housing behavior, the per capita approach is relatively easy to explain. Second, the per capita approach normatively assumes that each member in the

household should share equally in the use of, and hence expense of, the home. If one agrees with this normative assumption, then this approach is equitable

There are also disadvantages with using a per capita approach. First, child allocation costs are inconsistent between single- and two-parent households. The per capita approach implies that a child consumes as much housing as an adult, yet the cost attributed to a child differs depending on the number of adults in the household. For example, as Table 4 shows, one child in a single-parent family is assumed to generate 50 percent of housing costs, while one child in a two-parent family is assumed to generate only 33 percent of housing expenditures.

Second, when children are added, the per capita approach has the practical consequence of reducing the absolute cost of housing the original adults. Adults, who once may have generated all the costs, are treated as less expensive to house after the arrival of children.

Third, a per capita approach to all housing expenses may ignore potential differences in spending on fixed and variable housing items. There are relatively fixed housing expenses, such as the house itself, that may not change dramatically as family size changes. Other expenses are more sensitive to family size, such as furnishings, operations, and utilities.

Fourth, in normatively assuming that each family member should share equally in the housing, the per capita approach estimates the cost side, but estimates nothing on the benefit side, of having children in the household. Parents often want to be with their children, even though they must also bear

their children's expenses. Thus they also apparently get some benefit (including intangible ones) from being with their children. This benefit may motivate in part many lawsuits for child custody between divorced parents. The normative assumption (that children should share equally in the housing) goes beyond expenditures, and goes further into the role of children in their parents' lives. The per capita approach is consistent with this assumption on the expenditure side, but it only addresses part of the issue that is raised by this normative assumption.

For these four reasons, the per capita approach to estimating costs may tend to over-compensate for the fraction of housing spending that is due to children.

Average Use Approach. The average use approach assumes a very different starting point than the per capita approach. It observes how much housing is used on average by households without children, and compares it to how much housing is used on average by households with children. This approach implies that there is a fixed housing stock that is used by a given number of adults. When children are added to the family, they would add to the household's housing needs. To accommodate these needs, the family may either occupy a larger home than if they did not have children, or else use extra space they already had. Practically, the average use approach relies on examining the actual home size for families of different sizes. The difference is assumed to be due to the presence of children.

Using American Housing Survey data, JLARC staff observed how housing size varies with the number of children and the number of adults. The data were stratified by the number of adults and the number of children in each household, and then the mean of indicators of housing used by each type of household were calculated. Tables 5 and 6 show the mean number of bedrooms, the mean number of total rooms, and the mean estimated square feet by the number of children for one- and two-adult households, respectively. "All rooms" is the sum of bedrooms and common rooms, such as living rooms, kitchens, dining rooms, family rooms, recreation rooms, dens and studies. It does not include the number of bathrooms and unfinished space.

The data show that the observed average housing use increases as family size increases, but it increases at a less than proportionate rate. Families that are twice as large do not appear to be occupying, on average, a residence that is twice as large. Therefore, if families with more children are not occupying dramatically larger homes, it is unlikely that the corresponding additional cost of shelter attributable to more children is dramatically increasing.

The patterns shown in Tables 5 and 6 are also consistent with the results of a regression analysis of housing size shown in a separate technical appendix (which is available upon request from the JLARC office). These statistical results show that housing size did appear to increase with the number of children, but it was not the strongest driver of housing size. The decision to own or rent, and household income, were generally stronger predictors.

Table 5
Observed Indicators of Housing Size, One-Adult Households

Number of Children	Mean Number of Bedrooms	Mean Number of All Rooms	Mean Estimated Square Feet	Number of Observations
0	2.1	4.5	1428	10283
1	2.3	4.7	1481	1153
2	2.6	5.2	1617	798
3	2.8	5.3	1651	305
4	2.9	5.4	1679	102
5	3.3	5.7	1770	32
6+	3.6	6.3	1973	22

Source: JLARC staff analysis of American Housing Survey data.

Table 6
Observed Indicators of Housing Size, Two-Adult Households

Number of Children	Mean Number of Bedrooms	Mean Number of All Rooms	Mean Estimated Square Feet	Number of Observations
0	2.7	5.6	1758	11905
1	2.8	5.6	1776	3446
2	3.1	6.2	1944	3833
3	3.3	6.4	2007	1504
4	3.3	6.4	1993	439
5	3.6	6.5	2024	126
6+	3.9	7.0	2197	52

Source: JLARC staff analysis of American Housing Survey data.

From this pattern of observed housing use, JLARC staff calculated the increase in amount of housing used as the number of children in each group of households would increase. These increases became the basis for estimating the fraction of housing cost attributable to children. Any increase in house size is assumed to be due solely to the presence of children.

Table 7 shows the estimated amount of housing used by households with varying numbers of children, and how much of it can be attributed to the presence of children. It should be noted that the base – the observed housing size of childless households – comes from a heterogeneous group that includes

Table 7

Average Use Approach:
Additional Housing Used by Households with Children

Number of Children	House Size (Estimated Square Feet)		Additional Estimated Square Feet Attributable to Children (Percent of Total)	
	One Adult	Two Adults	One Adult	Two Adults
0	1428	1758	-	-
1	1481	1776	3.6	1.0
2	1617	1944	11.7	9.5
3	1651	2007	13.5	12.4
4	1679	1993	14.9	11.8
5	1770	2024	19.3	13.1
6+	1973	2197	27.6	20.0

Source: JLARC staff analysis of American Housing Survey data

young adults, widows and widowers, people that are planning to have children, and “empty-nesters” who have no juvenile children.

The average use approach has two main advantages. First, it is based on observed housing size that is used by families of different numbers of adults and children. It does not rely on a normative assumption of how resources should be shared within the family. Instead, any difference in housing use (and, therefore, total spending on housing) that is observed in households with more children is assumed to be due to providing for the needs of the additional children. Second, the average use approach is consistent with the economic theory of consumer behavior. Different size families may work within their existing budget constraints, shifting spending and “doing without,” as additional children come into the household. The average use approach simply observes how much total housing use may vary, by comparing different size family groups to each other.

There are also disadvantages to the average use approach. While being based on the observed data, the observed data will not likely provide a sufficiently detailed account of the housing decision process. The housing decision is likely inter-connected with other family planning decisions. That is, families may be selecting housing of a given size as they consider the number of children they plan to have. As a result, such a family may not increase the total amount of housing it uses as children are added, because the children are occupying extra space that was planned for their eventual use anyway. Consequently, the average use approach may tend to underestimate housing

costs attributable to children. Finally, the average use approach does not consider other factors that may be driving choice in housing size, such as income and the decision to own rather than rent. The effect of these other factors on child shares, derived under the average use approach, is unknown.

Transportation

Two types of transportation costs were identified as a starting point for this analysis: fixed and variable costs. The two subcategories for transportation expenditures were developed from more detailed spending items in the CES data. A fixed vehicle cost variable was developed by combining the spending on new and used cars and trucks, spending on vehicle financing, and spending on vehicle insurance. This variable reflects the entry price for operating a car or truck. This expense does not vary greatly given the number of miles driven per year. A variable transportation cost measure was developed by combining spending on gas and oil, licenses, other vehicles, maintenance and repairs, and public transportation. This variable captures the marginal expenses of operating a car or truck. This spending subcategory varies depending on the number of miles driven each year. Overall household spending in the two subcategories was estimated by the same regression approach used to estimate other spending amounts in the study.

To estimate the percentage of transportation spending due to children, two methods were available: the per capita approach, and the average use approach.

Per Capita Approach. As with housing, the USDA has used this approach to apportion transportation expenditures to children in its studies of expenditures on children. The proportions used under this approach are the same as those shown in Table 4.

Average Use Approach. JLARC staff analyzed data from the National Personal Transportation Survey (NPTS) to determine key factors indicating the use of transportation by different types of households. This data set provided the number of vehicles per household, and estimates of miles driven.

Average Number of Vehicles. JLARC staff calculated the mean number of vehicles used by one and two adult families with and without children. Table 8 shows the mean number of vehicles used by different types of households. For single-adult households, the change in mean vehicles varied considerably. For some strata, the change was counter-intuitive: as the number of children increased, the mean number of vehicles were lower. The lower means in the single-parent strata with the higher number of children are likely due to the small sample size of those strata, and the tendency for larger single-parent households to have lower income levels. As a result, JLARC staff calculated the average number of vehicles for all families with children, combined across strata.

Table 8 shows that single adult, zero-child households have, on average, .97 vehicles. Single parents with children on average have 1.02 vehicles. Husband-wife households without children on average have 1.89

Table 8

Average Use Approach: Mean Number of Vehicles per Household

Number of Children	One Adult			Two Adult		
	By Stratum	All Strata with Children	Stratum N	By Stratum	All Strata with Children	Stratum N
0	0.97	1.02 (5% children's share)	8216	1.89	2.05 (8% children's share)	14352
1	1.08		909	2.05		4145
2	0.97		618	2.06		5014
3	1.10		221	2.02		1899
4	0.70		79	1.99		488
5	0.31		14	2.32		103
6+	0.70		5	2.02		70

Source: JLARC staff analysis of National Personal Transportation Survey data.

vehicles, while two-parent families with children on average have 2.05 vehicles. The fraction of fixed vehicle costs that can reasonably be attributed to having children was calculated by measuring the difference in vehicles owned by childless families from the observed vehicles owned by families with children. Five percent of fixed transport costs can be attributed to children in one-parent families and eight percent of fixed vehicle costs can be attributed to children in two-parent families.

Average Miles Driven. The next step was to estimate the use of vehicles by families with different numbers of adults and children. This was obtained by examining a subsample of the NPTS where there was valid mileage data for all vehicles used by the family. From this subsample, JLARC staff calculated the mean number of miles driven annually by family groups of different sizes, which are shown in Table 9. The results in Table 9 indicate that the

Table 9

Mean Annual Number of Miles Driven, by Household

Number of Children	One Adult		Two Adult	
	Mean Miles	N	Mean Miles	N
0	9215	3116	10098	1506
1	13277	270	13417	249
2	15913	203	17915	222
3	18751	54	16407	88
4	18658	12	17890	27
5	20893	1	19556	6
6+	22916	1	21033	4

Source: JLARC staff analysis of National Personal Transportation Survey data.

number of miles driven does increase as the number of children increases. The estimates for average miles driven by families with four to six plus children had to be extrapolated because of an insufficient number of observations.

The percent of miles driven that are due to the presence of children was calculated by subtracting the mean miles for families with children from the mean miles for families without children and dividing by the mean miles driven for the family with children. The resulting estimated fractions of miles driven due to children are shown in Table 10.

Health Care

The central analysis issue in estimating household spending on health care was how to use National Medical Expenditure Survey findings to determine the children's share of household health care expenditures. JLARC staff derived the assumed children's share of household health care expenditures from projections of average child and adult health care expenses. These projections

Table 10

Average Use Approach:
Percentage of Miles Driven Attributable to Children

Number of Children	One Adult	Two Adult
1	31	24
2	42	44
3	51	38
4	51	44
5	56	48
6+	60	52

Source: JLARC staff analysis of National Personal Transportation Survey data.

were generated by the Agency for Health Care Policy and Research (AHCPR) of the U.S. Department of Health and Human Services, based on data from the National Medical Expenditure Survey. The National Medical Expenditure Survey data were collected in 1987 from more than 14,000 households and 34,000 persons. According to the AHCPR report *Trends in Personal Health Care Expenditures, Health Insurance, and Payment Sources, Community-Based Population, 1996-2005*, the 1996 per capita annual expenditure on health care was projected to be $968.66 for persons age 0 to 17, and $2,186.51 for persons age 18 to 64. The average percentage of these expenditures to be paid out-of-pocket was estimated to be 17.43 percent, resulting in the estimated annual out-of-pocket health care expenses to be $168.84 for children and $381.11 for adults.

The resulting proportions of household health care expenditures attributable to children are shown in Table 11. They were derived from the AHCPR estimates of annual out-of-pocket health care expenses for children and

Table 11

Proportion of Health Care Expenditures Attributable to Children

Number of Children	Single-parent households	Two-parent households
1	0.307	0.181
2	0.470	0.307
3	0.571	0.399
4	0.639	0.470
5	0.689	0.526
6+	0.727	0.571

Source: JLARC staff analysis of estimates from *Trends in Personal Health Care Expenditures, Health Insurance, and Payment Sources, Community-Based Population, 1996-2005*, Agency for Health Care Policy and Research, U.S. Department of Health and Human Services.

adults. For example, for a husband-wife family with two children, the children would account for $337.68 ($168.84 x 2) of a total of $1,099.90 ($381.11 x 2 + $168.84 x 2), or 0.307 of household expenditures on health care.

Clothing

Household clothing expenditures were estimated for two main subcategories: (1) clothes, and (2) footwear and other apparel products andservices (such as dry cleaning, repairs and alterations).

Clothes. The Consumer Expenditure Survey data reported separately expenditures on clothes for infants and children up to age 16. Therefore, 100 percent of these expenditures were attributed to children. However, expenditures on clothes for children ages 16 and 17 are not separately reported

from expenditures for adult men and women in the household. Therefore, JLARC staff identified the households with children ages 16 and 17, and pro-rated the household expenditures on clothing for men and women age 16 and older on a per capita basis.

Footwear and Other Apparel Products and Services. Expenditures in this subcategory were reported for the entire household, and not reported separately for children. Expenditures attributable to children in this subcategory were pro-rated on a per capita basis.

Child Care and Education

The Consumer Expenditure Survey reports separately household expenditures on child care and educational expenses, which is then attributed 100 percent as expenditures on children. Households with larger numbers of children tended to report lower expenditures than households with one or two children. This pattern can be explained by the notion that households with larger numbers of children may tend to reduce these expenditures by having older siblings babysitting their younger siblings.

Miscellaneous Costs

There are several spending items in addition to the six previous categories. Spending on total miscellaneous items covers several summary categories in the Consumer Expenditure Survey. These are entertainment, personal care items, reading materials and other miscellaneous items. This category also included a subcategory for pets, toys and playground equipment. This subcategory was subtracted from the miscellaneous category and treated

separately. JLARC staff assumed that 100 percent of spending on pets, toys and playground equipment was due to children. For the other miscellaneous expenditures, the share of these expenses due to children was based on the per capita approach.

USE OF REGRESSION IN THIS STUDY

The key aspects regarding the use of regression analysis in this study are: (1) an emphasis on estimating prevailing levels of the dependent variable (in this case, expenditures); (2) use of logarithmic transformations of the data; and (3) use of regression models on total estimated household expenditures, rather than disaggregating by each cost category.

Emphasis on Estimating Prevailing Levels of Expenditures

This study emphasizes a different focus on regression analysis than that emphasized in many other studies. In this study, the primary objective is to estimate a prevailing level of expenditures, while taking different levels of household income into account. If all households had the same level of income, then simply taking the mean of all expenditures would be an appropriate way to summarize numerically the wide dispersion of all observations down into a single prevailing value. But because households have different levels of income (which is fairly strongly associated with total household expenditures), then the estimated prevailing level of expenditures should be adjusted according to different levels of income.

Regression can make this adjustment, in the form of a model which specifies predicted expenditures as a function of income:

Predicted Expenditures = a + b(Income).

Regression provides a way to find values of "a" and "b" that fit the observed data best. "Best" can be roughly defined as minimizing the differences between the model's predicted expenditure and the actual expenditure for each and every observation in the data. Exhibit 1 provides a brief explanation of how regression works.

Exhibit 1
Regression Models

Regression models are statistical models involving more than one variable. The regression approach assumes that there is a relationship between one variable (generally known as the dependent variable) and one or more underlying variables (generally known as the independent variables). A simple regression model has one dependent variable and only one independent variable. Regression can be used to predict unknown values of the dependent variable given values of the independent variables.

The concept behind a simple regression model is essentially the same idea as curve fitting. A sample of observations for which there are values of the independent and dependent variable can be plotted in a diagram showing a scatter of data points. The simple regression model uses a mathematical algorithm to estimate the line that best fits the scatter plot.

The interpretation of a regression model centers on the coefficients of the independent variables. (In the equation "Predicted Expenditures = a + b(Income)," "b" is the coefficient of the independent variable Income.) In the simple regression model, the coefficient of the independent variable is the slope of the line that was fitted to the scatter plot. If this coefficient is positive, it means that the value of the dependent variable tends to increase as the value of the independent variable increases. Similarly, if the coefficient is negative, then the value of the dependent variable tends to decrease as the value of the independent variable increases.

For example, in this study, estimated spending on children is the dependent variable, and income is the independent variable. In general, as income increases, spending will also tend to increase. This relationship is demonstrated by a positive value of the coefficient for income.

The “predicted expenditure” estimate serves as a measure of the prevailing expenditure that is adjusted for income. If income were found empirically to have little association with expenditure level, then the value of “b” may be very close to zero. The value of “a” would then be very close to the mean of expenditures, so that the model essentially reduces down to a simple mean. But if income were to have some association with expenditure levels, then the “predicted expenditure” estimate can be thought of as the prevailing level of expenditure, given the level of income – while taking all observations into consideration at the same time.

In contrast to this study’s focus on predicted expenditures as a measure of prevailing expenditures, many other studies that use regression models may focus on the strength of association between the independent and dependent variables. The main objective of these studies is to determine the best model for explaining the variation in the dependent variable. Given this different objective, the focus is often on the significance level of the independent variables, and the “R-Square” statistic as a measure of how much variation in the dependent variable is explained by the independent variables. Such studies emphasize the question: “What best explains the variation in the dependent variable?”

This study emphasizes a different question: “How can the various values in the dependent variable (expenditures) be summarized down to a prevailing level, while taking different values of the independent variable (income) into account?” Consequently, even if the observed actual expenditures were

scattered as a completely random cloud around the regression line of predictions, so that the R-Square were close to zero and all statistical tests were insignificant, the main objective of this study could still be met: a prevailing level of expenditures would be estimated, while taking income into account. In this situation, small R-Square values and insignificant statistical tests would be addressing questions which would concern explaining the variation in the dependent variable, but which would not be central to the main purpose of this study.

Logarithmic Transformations of the Data

There were two reasons for transforming the expenditure and income data into logarithmic form when carrying out the regression analysis. One is that a logarithmic transformation of the data reduces the unusually higher influence that observations with extremely high income or expenditure values would have when estimating the regression coefficients.

The other has to do with the economic theory concerning how income and consumption are related. According to economic theory, the relationship between household income and household expenditures is in the shape of a curve: when moving along the distribution from low-income households to high-income households, the amount of income spent on consumption rises, but at a declining rate of increase.

Logarithmic transformations allow the regression model to take the form of a curve, while finding the function between income and household expenditures that best fits the data. Figure 3 shows an example of a regression

line that is derived from log-transformed data. The scatter plot in Figure 3 shows that the observed data points are fairly evenly distributed around the regression model predictions. In Figure 4, the same regression model predictions and the observed data points are transformed back into raw form. In raw form, the regression model predictions take the shape of a curve. As shown in the next chapter, the regression models that were estimated from the data indeed took the form of a curve.

Applying Regression Models to Total Estimated Household Expenditures on Children

An alternative, more disaggregated approach was available for this study. It entailed estimating prevailing household expenditures with a separate regression model for each expenditure category as a first step, applying the proportions attributable to children to each category, and then summing up the estimated expenditures across all categories in the last step. JLARC staff also estimated expenditures on children using this approach (documentation of these alternative estimates are in separate technical appendixes which are available from the JLARC office upon request).

JLARC staff chose to use the method of applying regression models to total estimated household expenditures on children (rather than using the more disaggregated approach) for two primary reasons: (1) the "zero spending problem," and (2) the fact that individual households may meet their budget constraints in different ways, with tradeoffs.

Figure 3

Logarithmic Form of Observed Data and Regression Curve

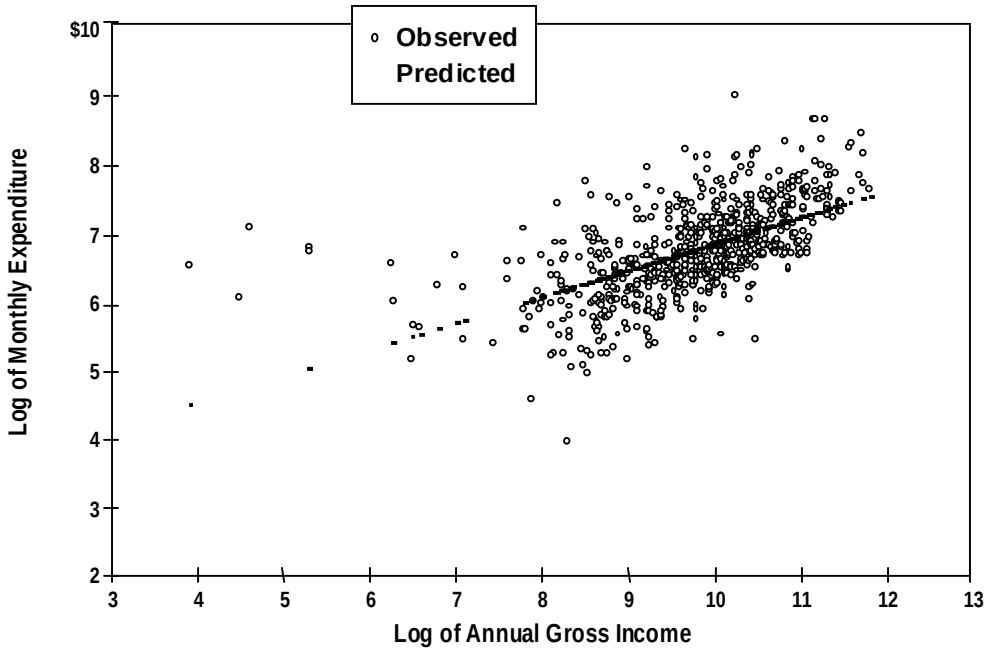
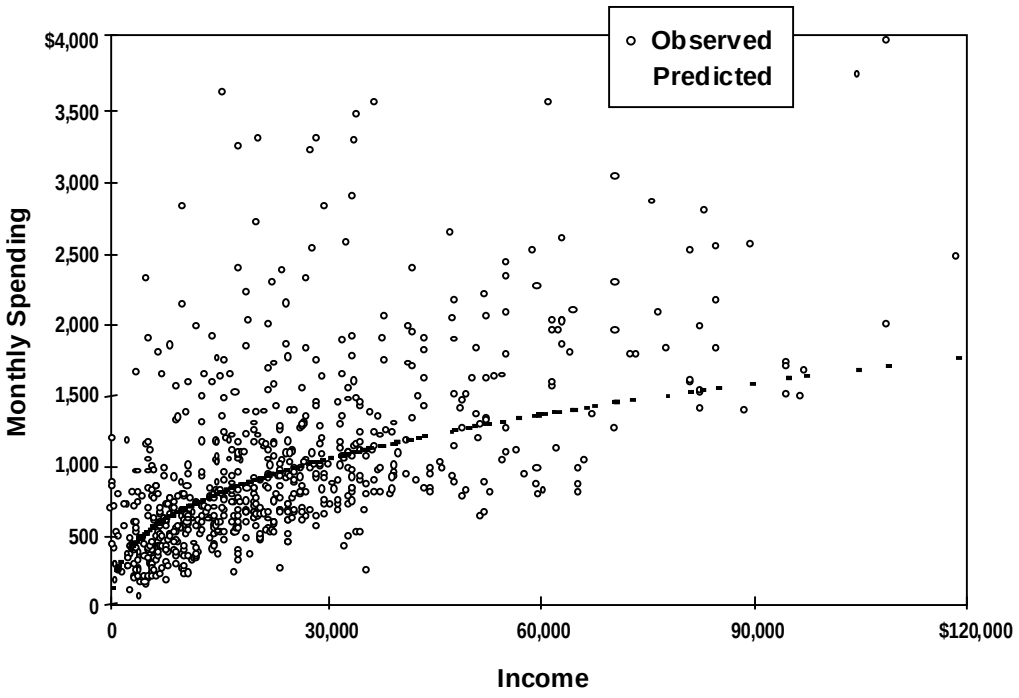


Figure 4

Raw Form of Observed Data and Regression Curve



Note: These examples are from expenditures on shelter, from single-parent households with one child (n=709).
Source: JLARC staff analysis of 1997-98 Consumer Expenditure Survey data.

The "Zero Spending Problem." As household spending is disaggregated into more detailed spending categories, there are instances in which substantial numbers of households reported no quarterly spending on some categories in the Consumer Expenditure Survey. For example, approximately one-half of the households at all levels of income reported zero quarterly out-of-pocket expenditures on health care.

When a large proportion of households report zero expenditures for a given cost category, estimating regression models for the entire sample may cause the estimates of spending to be biased. Including these observations, when the households reporting positive expenditures were log-transformed, could bias estimated regression coefficients downward. In other studies of household expenditures, this problem has been overcome by using tobit analysis, a specialized variation of regression modeling.

Another way to deal with this problem (which JLARC staff used to generate the alternative estimates utilizing a disaggregated approach) was to estimate each regression model using only households reporting positive expenditures. Then the resulting function is adjusted by multiplying it by the proportion of households reporting positive expenditures. In this way, the households with zero expenditures are averaged into the prevailing expenditure level, while the regression coefficients are based on households with positive expenditures, thus reducing the bias problem.

A better solution to this problem, however, was to estimate regression models based on data summed across all cost categories. Consequently, every

household reported positive total quarterly expenditures, so that there were no observations causing the “zero expenditure problem.”

Households Meeting Budget Constraints in Different Ways. Individual households often may have different needs, preferences, and tastes. As a result, at a given level of income (which would constrain their budget), they may choose different tradeoffs between different categories of spending. For example, a family may choose to spend more on housing and less on transportation. Or another family may spend more on health care and less on clothing and entertainment.

When a regression is estimated separately for each spending category, the resulting function essentially assumes that each family’s spending behavior should be at the “average” level. Individual family differences and tradeoffs are ignored.

In contrast, by estimating a single regression based on data summed across all cost categories, individual household spending decisions are not removed from the household budget constraint on a category-by-category basis. An average level of total spending is estimated (for a given level of income), but it permits different tradeoffs between different cost categories. Instead, all spending is added together into a single spending function that is subject to each household’s budget constraint. Unusually high or low spending in some categories (reflecting different tradeoffs) may balance out when added together, rather than appear as outliers when examined separately.

III. Estimated Costs of Raising Children and the Child Support Guidelines

JLARC staff estimated total expenditures on children for each household in the data set, and then applied regression models to generate curves representing the *prevailing* level of expenditures on children at a given level of income, for all 12 family composition strata. Appendix C lists the functions derived from the regression models, reflecting alternative methods of apportioning household expenditures to children, and for all 12 family composition strata. Further, a separate technical appendix provides more of the details on the regression models themselves (available from the JLARC office upon request).

This chapter first examines the resulting cost curves themselves, comparing them in different ways (for example, examining cost curves from single-parent households with those from husband-wife households). Then the chapter discusses how the data on the estimated expenditures on children can be used in relation to the child support guidelines.

ESTIMATED TOTAL PREVAILING EXPENDITURES ON CHILDREN

The total cost curves shown in Figures 5 through 10 illustrate key differences in the prevailing cost estimates on three key dimensions: (1) size of household; (2) husband-wife compared to single-parent households; and (3) what assumption is used to attribute expenditures to children (by comparing estimates based on the per capita approach with those based on the average use approach).

Size of Household

Examination of Figures 5 and 6, for example, shows a difference between the cost estimates of smaller households (those with one, two or three children) and larger households (those with four, five, or six or more children). The cost curves for households with one, two and three children appear to be sound estimates. They are derived from relatively large numbers of observations, so the estimates are less subject to sampling error. Furthermore, the pattern emerging from the curves in Figure 5 makes sense: the prevailing expenditures in one-child households is substantially lower than those of two-children households, which in turn are substantially lower than those of three-children households.

In contrast, the estimated cost curves for households with larger numbers of children do not appear to be as sound (Figure 6). They are derived from much smaller numbers of observations, so the estimates are more vulnerable to sampling error. The larger households also tended to have lower ranges of incomes (compared to smaller households). Consequently, the curves in Figure 6 are based on data points that tend to cluster more on the left half of the graphic, resulting in the projections on the right half of the graphic being less grounded in actual empirical observation.

The resulting pattern shown in Figure 6 appears to be relatively anomalous. Among households with less than $30,000 annual income, those with six or more children appear to be spending less than those with five children, which appear to be spending less than those with four children. However, the pattern is reversed among households with more than $60,000 in annual income:

Figure 5

Total Expenditures on Children, Husband-Wife Households
(Per Capita Approach)

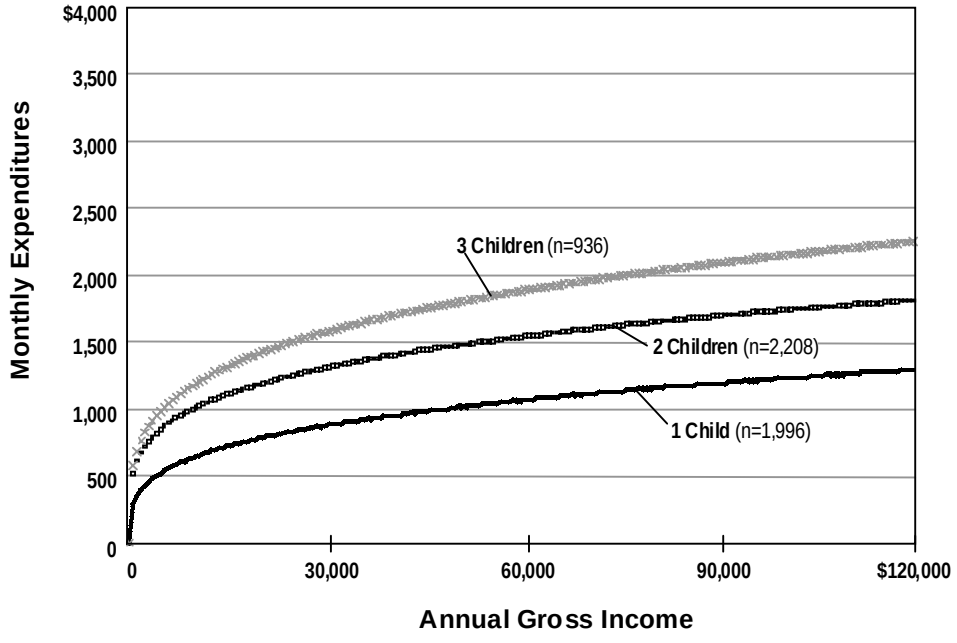
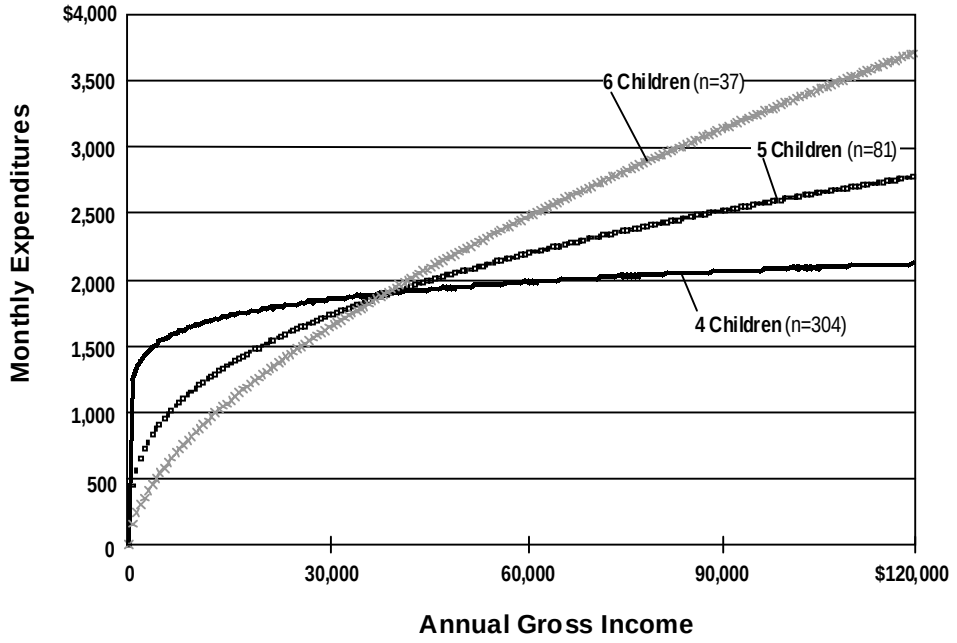


Figure 6

Total Expenditures on Children, Husband-Wife Households
(Per Capita Approach)



Source: JLARC staff analysis of 1997-1998 Consumer Expenditure Survey data.

those with five children are spending slightly more than those with four children, while the expenditures of households with six or more children appear to be skyrocketing in comparison. Overall, the soundness of the estimated expenditures for the large households (that are derived from less than two hundred observations) appears to be questionable.

Husband-Wife Households Compared to Single-Parent Households

Figures 7 and 8 show one way in which single-parent household expenditures on children are similar to those of husband-wife households. The estimates for smaller single-parent households also appear relatively sound, when those for the larger households also appear questionable.

The biggest perceived difference between husband-wife households and single-parent households may be that single-parent households generally spend much less on children. While empirical observation supports this statement, the single-parent households at the same time also generally have much less income than husband-wife households. Therefore, a comparison of expenditures on children between husband-wife and single-parent households should be controlling for income as well as the number of children.

Comparing Figures 5 and 7 shows a contrast in the estimated prevailing expenditures on children between husband-wife households and single-parent households. When controlling for income level, single-parent households on average appear to be spending more on children than husband-wife households when there are one or two children in the household. For

Figure 7

Total Expenditures on Children, Single-Parent Households
(Per Capita Approach)

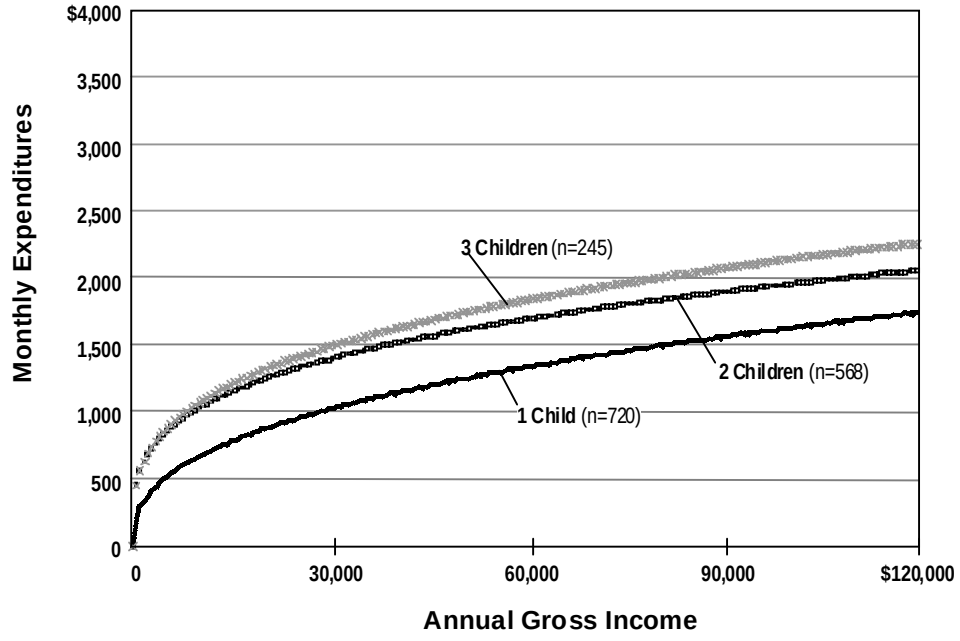
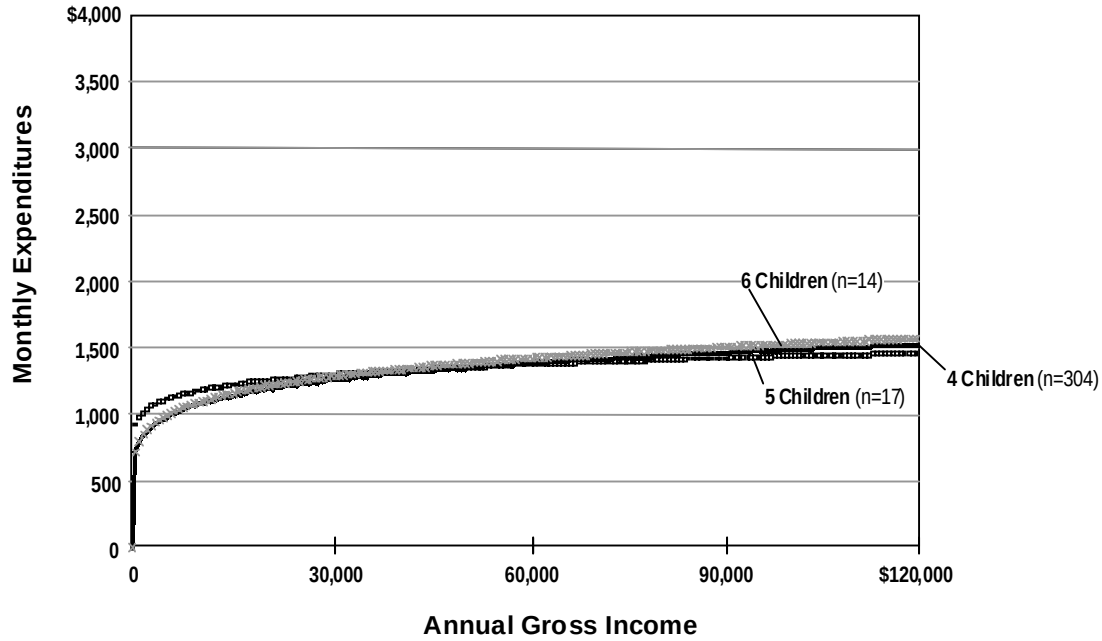


Figure 8

Total Expenditures on Children, Single-Parent Households
(Per Capita Approach)



Source: JLARC staff analysis of 1997-1998 Consumer Expenditure Survey data.

example, as shown in Table 12, husband-wife households with an annual income of $30,000 and two children are estimated (under the per capita assumption) to have a monthly prevailing expenditure of $1,306. Comparable single-parent households are estimated to have a monthly prevailing expenditure of approximately $1,387. However, when there are three children, husband-wife households appear to spend slightly more, on average. Similar contrasts appear at the $50,000 annual income level.

Table 12

Comparison of Estimated Prevailing Monthly Expenditures on Children: Husband-Wife Versus Single-Parent Households (Per Capita and Average Use Assumptions)

$30,000 Annual Income				
Number of Children	Husband-Wife Households		Single-Parent Households	
	Per Capita	Average Use	Per Capita	Average Use
1	$879	$483	$1,018	$526
2	$1,306	$793	$1,387	$815
3	$1,574	$930	$1,477	$868
$50,000 Annual Income				
Number of Children	Husband-Wife Households		Single-Parent Households	
	Per Capita	Average Use	Per Capita	Average Use
1	$1,020	$558	$1,249	$646
2	$1,480	$900	$1,609	$948
3	$1,805	$1,071	$1,735	$1,020

Source: JLARC staff analysis.

There are two factors that may cause the estimated expenditures on children of single-parent households to be biased downwards. One is that the CES data on which the single-parent expenditure estimates are based may not be as complete as that from husband-wife households. The CES data include expenditure information on single parents with children who live in the household (that is, the custodial parents), but no information on the non-custodial parents' expenditures on those children. Tracking this additional information down could be a very difficult and expensive undertaking. It is possible that the combined expenditures on children for housing, food, and entertainment of both single-parent households may be higher compared to those of one corresponding husband-wife household, or of one of the single-parent households. Given this possibility, using only the estimated expenditures of single-parent custodial households may be understating the full expenditures on these children in some cases.

The other factor may be that observed custodial single-parent expenditure estimates may reflect the fact that some non-custodial parents may not be making the full child support payments that they should. Seventy-seven percent of single-parent households in the CES data did not report receiving any child support payments. In some cases, such as widowed parents, or divorced parents with no child support settlement, this situation may be appropriate. But the average single-parent expenditures may also be biased downwards if, in many cases, the custodial parents are not receiving the full child support payments to which they are entitled.

Per Capita Versus Average Use Assumption

Some key choices can be made in estimating housing and transportation expenditures on children, by using either the per capita approach or the average use approach. These choices have a major impact on the total expenditure curves generated, because housing and transportation both account for very large portions of the total household budget.

Two alternative sets of estimates demonstrate how wide the range could be. The first set of estimates uses a per capita approach in all instances in which it could be chosen. The second set of estimates are based on the average use approach whenever possible. Basing cost estimates on a per capita approach to housing and transportation would result in numbers on the higher end of the range. Likewise, assuming an average use approach in all cases would result in estimates on the low end.

Comparing Figures 5 and 7 with Figures 9 and 10 can provide a sense of how wide this range would be. The cost estimate curves in Figures 5 and 7 are based on the per capita approach being used in all cases in which it could be chosen. In contrast, Figures 9 and 10 correspond to Figures 5 and 7, except that the average use approach is used in all cases possible. Likewise, Table 12 shows estimated prevailing monthly expenditures based on the average use approach (next to comparable estimates under the per capita approach).

Overall, it appears that expenditure estimates based on using the per capita approach all of the time could be as much as 80 or 90 percent higher than those based on using the average use approach for all subcategories. However, it is also possible to apply the per capita assumption to some subcategories and

Figure 9

Total Expenditures on Children, Husband-Wife Households
(Average Use Approach)

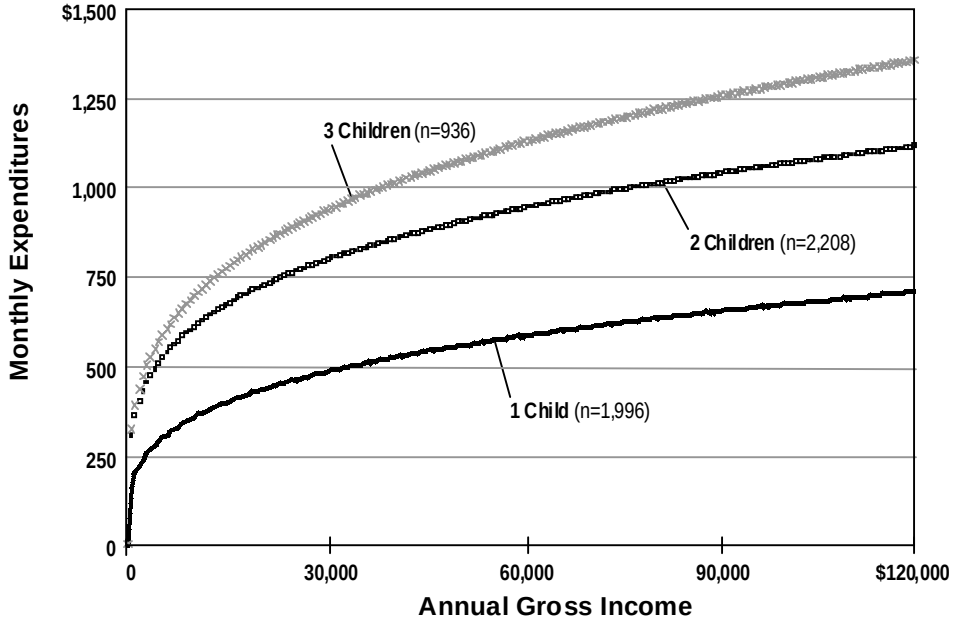
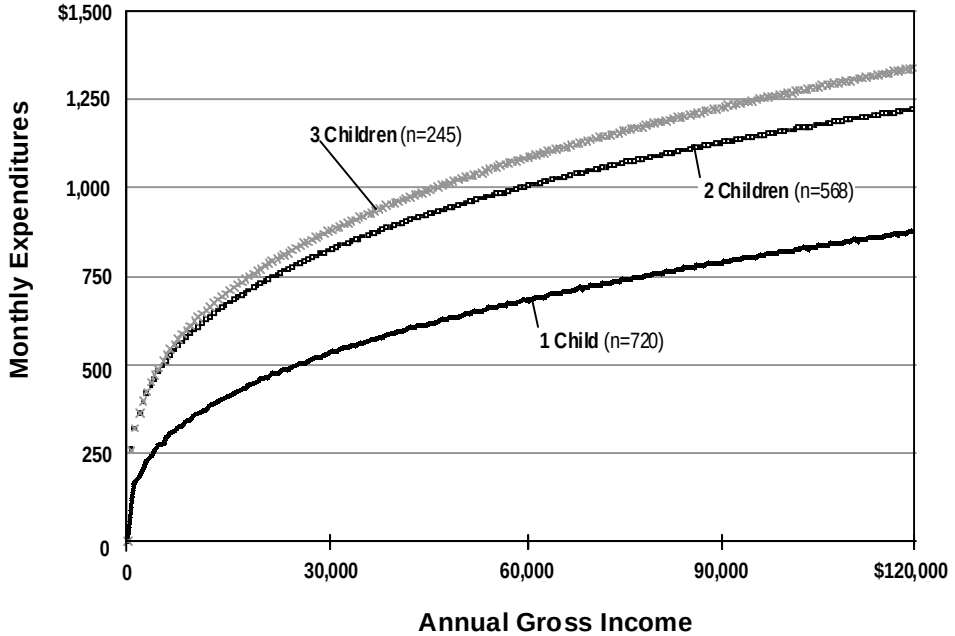


Figure 10

Total Expenditures on Children, Single-Parent Households
(Average Use Approach)



Source: JLARC staff analysis of 1997-1998 Consumer Expenditure Survey data.

the average use assumption to others. Therefore, policy decisions concerning which assumptions are more appropriate for specific cost subcategories could result in estimates that fall in the middle of the range shown here. Two alternatives that fall in the middle of the range are also examined later in this chapter in relation to the child support guidelines.

Conclusions

Examining the various estimates of prevailing expenditures on children leads to several conclusions regarding how they can be used best when examining child support guidelines. The conclusions fall into three groups: (1) which cost curves are best to use; (2) what difference using estimates from husband-wife or else single-parent households would have; and (3) how much difference using the per capita approach versus the average use approach could make in attributing expenditures to children.

Which Cost Curves Are Best to Use. The cost curves from one-, two- and three-children households (either from husband-wife or single-parent households) appear to be the soundest. In addition, the cost curve for husband-wife households with four children may also be sufficiently representative of prevailing expenditures to use in examining child support guidelines. These curves are derived from sufficiently large numbers of observations to provide stable and meaningful estimates.

The other cost curves are derived from too few observations and appear anomalous. Consequently, they would provide too shaky a foundation for determining the child support guidelines. Instead, when constructing child

support guidelines, a policy decision may be used (such as a set percentage increase for each extra child). The use of policy decisions in this way is discussed further in the next section, which addresses how prevailing cost estimates can be used to determine child support guidelines.

Estimates from Husband-Wife Versus Single-Parent Households. It appears that for households with one or two children, cost estimates based on single-parent households would be somewhat higher than those based on husband-wife households (when controlling for level of income). But for households with three children, those based on single-parent households would be slightly lower. These results occur even though the reported expenditures for children of single-parents may be understated in some cases, because the data are including the expenditures of custodial but not non-custodial parents. The expenditure data (as well as income data) from husband-wife households are more complete. Therefore, estimates from husband-wife households would provide a more sound basis for determining or evaluating child support guidelines. In addition, Virginia's use of the income shares approach for determining child support would be more consistent with guidelines based on data from husband-wife households than from single-parent households.

Per Capita Versus Average Use Approach. Using a per capita approach or else an average use approach can make a substantial difference on the prevailing amount that is estimated to be spent on children. Therefore, the choice of which approach to apply to each housing and transportation subcategory appears to be a key series of policy decisions.

ESTIMATED COSTS OF RAISING CHILDREN IN RELATION TO THE CHILD SUPPORT GUIDELINES

There are two ways that the data on the estimated expenditures on children can be used in relation to the child support guidelines. One way would emphasize evaluating the existing guidelines, using the estimates of individual household expenditures on children. The primary question would be: Do the current guidelines tend to be above or below what most households are estimated to be spending on children? More specifically, what percentage of households would have estimated expenditures above the total amount for child support assumed in the current guidelines, and what percentage would fall below this amount? This way of applying the data and estimates is first presented in the following section.

A second way would be to use the prevailing expenditure estimates, and whatever additional policy decisions would be appropriate, for determining alternative sets of child support guidelines. The final section of this chapter demonstrates how these alternative guidelines could be determined using these estimates.

Using Estimates to Evaluate the Current Child Support Guidelines

JLARC staff estimated individual household expenditures on children in several ways. Regardless of which way the expenditures were estimated, households with gross annual incomes below $30,000 appeared to spend more on children than the amounts assumed in the child support guidelines. However, results for households earning $30,000 or more annually depended on what assumption was used to estimate household expenditures on children. After

presenting more of the details on how household expenditures on children were estimated, results from the comparison of the various estimates to the guidelines are discussed in more detail.

Estimating Individual Household Expenditures on Children. JLARC staff estimated, for each individual household, monthly expenditures on children, based on: (1) data from husband-wife households with children; and (2) alternative assumptions regarding how household expenditures are attributed to children.

Husband-Wife Households. There are two reasons why JLARC staff used data from husband-wife households, rather than single-parent households, for this analysis. One has already been discussed in the previous section: expenditure data and income data from husband-wife households are more complete, compared to single-parent households. The other reason is that the guidelines were originally based on data from husband-wife households. Therefore, it was more appropriate to compare amounts specified in the guidelines with expenditure estimates from a population more similar to the one on which the guidelines were originally based.

Alternative Expenditure Estimates. JLARC staff estimated individual household expenditures in two steps. First, JLARC staff observed each household's monthly total expenditure on each cost category (such as food, housing, transportation, and so on). Second, four alternative assumptions for attributing the proportion of household expenditures to children were used, resulting in four alternative sets of estimates. (The methodological bases of

these alternative assumptions are described in more detail in Chapter II). The four sets of assumptions are:

- The per capita (PC) approach was applied to all housing and transportation subcategories.
- The average use (AU) approach was applied to all housing and transportation subcategories.
- The average use approach was applied only to the fixed transportation cost subcategory, and the per capita approach was applied to all other transportation and to all housing subcategories (AU Vehicles).
- The average use approach was applied to the shelter and fixed transportation subcategories, and the per capita approach was applied to all other housing and transportation subcategories (AU Vehicles & Shelter).

Comparison of Estimated Household Expenditures with Child Support Guidelines. The percentages of husband-wife households with estimated expenditures on children that are above the amounts specified in the child support guidelines are shown in Table 14. Households were divided into four groups, based on their reported annual gross income: (1) lower income (less than $30,000); (2) lower-middle income ($30,000 to $59,999); (3) upper-middle income ($60,000 to $89,999); and (4) upper income ($90,000 or more). Table 14 also shows how many observations are in each income group within each stratum. Figures 11 through 14 illustrate the distribution of data points under each assumption summarized in the percentages in Table 14, for husband-wife households with two children. Two sets of findings emerge from Table 14: one for households earning less than $30,000 annually, and the other for households earning $30,000 or more.

Table 14

Percentage of Husband-Wife Households Estimated to Spend More On Children than Amounts Assumed in Child Support Guidelines

Estimates Based on Per Capita (PC) Assumption

	Number of Children					
Annual Gross Income	**1**	**2**	**3**	**4**	**5**	**6**
Less Than $30,000	93.7%	94.4%	96.8%	92.5%	85.2%	94.1%
$30,000 to 59,999	92.4%	89.6%	87.4%	95.1%	85.3%	92.9%
$60,000 to 89,999	83.1%	85.4%	86.4%	79.5%	100.0%	75.0%
$90,000 or more	87.5%	88.2%	83.3%	88.4%	77.8%	50.0%

Estimates Based on Average Use for Vehicles (AU Vehicles) Assumption

	Number of Children					
Annual Gross Income	**1**	**2**	**3**	**4**	**5**	**6**
Less Than $30,000	92.4%	92.7%	96.0%	90.8%	85.2%	94.1%
$30,000 to 59,999	89.7%	86.1%	83.9%	92.2%	70.6%	92.9%
$60,000 to 89,999	79.8%	81.7%	80.4%	79.5%	90.9%	75.0%
$90,000 or more	85.5%	86.4%	80.2%	88.4%	77.8%	50.0%

Estimates Based on AU Shelter & Vehicles Assumption

	Number of Children					
Annual Gross Income	**1**	**2**	**3**	**4**	**5**	**6**
Less Than $30,000	78.9%	79.0%	87.7%	84.2%	70.4%	88.2%
$30,000 to 59,999	69.8%	68.5%	67.1%	76.5%	58.8%	78.6%
$60,000 to 89,999	56.3%	62.0%	55.4%	61.5%	63.6%	50.0%
$90,000 or more	63.4%	66.9%	61.5%	65.1%	66.7%	50.0%

Estimates Based on Average Use (AU) Assumption

	Number of Children					
Annual Gross Income	**1**	**2**	**3**	**4**	**5**	**6**
Less Than $30,000	63.9%	67.3%	76.2%	73.3%	51.9%	82.4%
$30,000 to 59,999	46.4%	50.4%	42.8%	61.8%	50.0%	71.4%
$60,000 to 89,999	37.3%	43.7%	37.0%	48.7%	36.4%	50.0%
$90,000 or more	43.9%	48.9%	44.8%	44.2%	44.4%	0.0%

Number of Observations Per Cell

	Number of Children					
Annual Gross Income	**1**	**2**	**3**	**4**	**5**	**6**
Less Than $30,000	474	572	252	120	27	17
$30,000 to 59,999	739	826	404	102	34	14
$60,000 to 89,999	480	487	184	39	11	4
$90,000 or more	303	323	96	43	9	2
Grand Total	1996	2208	936	304	81	37

Source: JLARC staff analysis of: 1997-98 Consumer Expenditure Survey data; and Child Support Guidelines, Section 20-108.2, *Code of Virginia*.

Households Earning Less than $30,000. The vast majority of lower-income households appear to be spending more on children than the amounts specified in the guidelines. This finding appears across all strata (that is, regardless of number of children in the household), and across all four alternative approaches for estimating expenditures on children.

Households Earning $30,000 or More. The pattern varies, depending on the approach used for estimating expenditures on children. Under the per capita (PC) and average use for vehicles (AU Vehicles) approaches, the estimates are relatively higher. Consequently, under these alternatives the vast majority (75 percent or more) of the households across all strata generally are estimated to spend more on children than the amounts in the guidelines.

Under the third alternative, average use for vehicles and shelter (AU Vehicles & Shelter), the estimates are relatively lower. Therefore, the proportion of households estimated to spend above the guidelines generally ranges from about one-half to two-thirds.

And under the average use assumption (AU), with the lowest estimated expenditures, about one-third to one-half of the households are estimated to be spending more than the amounts in the guidelines. In other words, under this alternative, about one-half to two-thirds of the households are estimated to be spending below the amounts in the guidelines.

Figure 11

Child Support Guidelines and Estimated Household Expenditures on Children, Husband-Wife Households with Two Children

Per Capita Approach (PC)

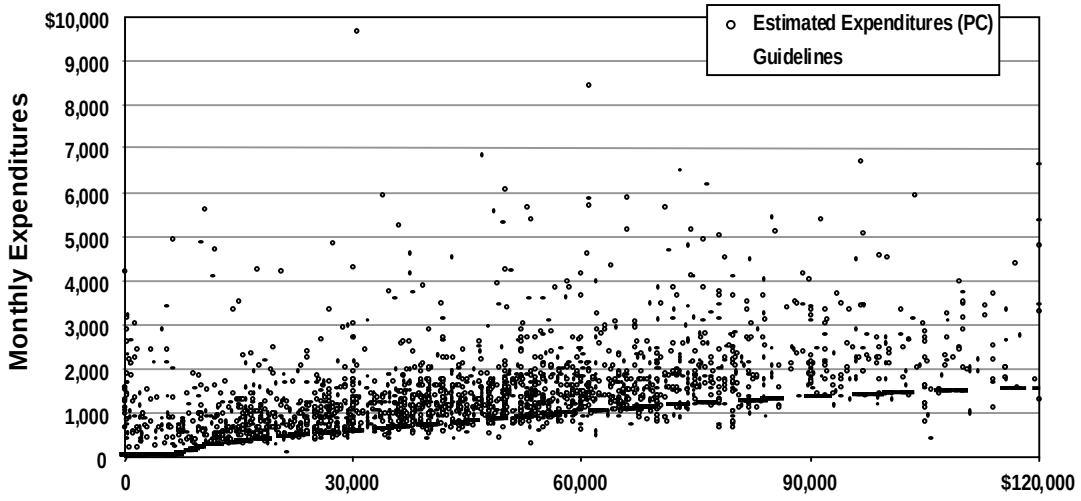
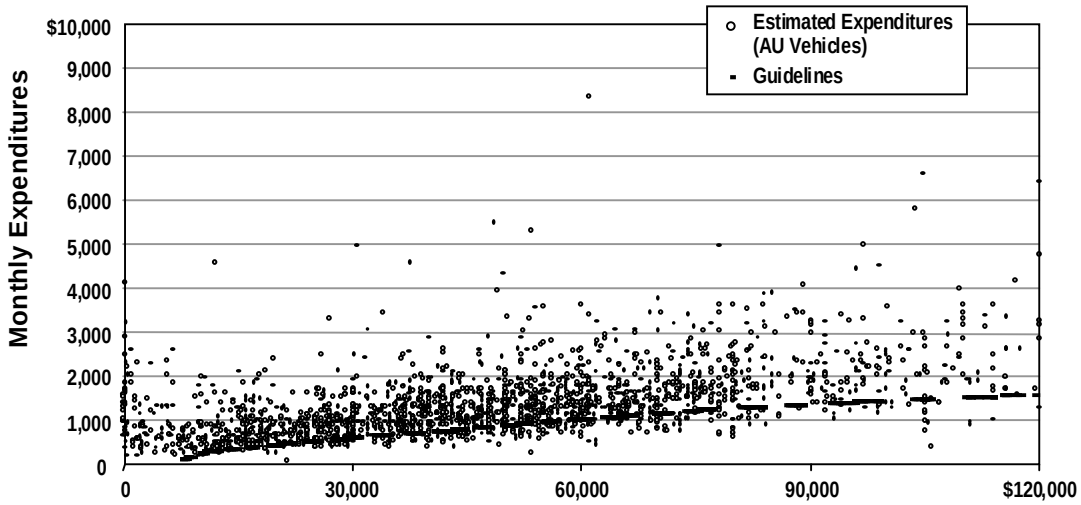


Figure 12

Child Support Guidelines and Estimated Household Expenditures on Children, Husband-Wife Households with Two Children

Average Use Applied to Vehicles (AU Vehicles)



Source: JLARC staff analysis of 1997-1998 Consumer Expenditure Survey data.

Figure 13

Child Support Guidelines and Estimated Household Expenditures on Children, Husband-Wife Households with Two Children

Average Use Applied to Vehicles and Shelter (AU Vehicles & Shelter)

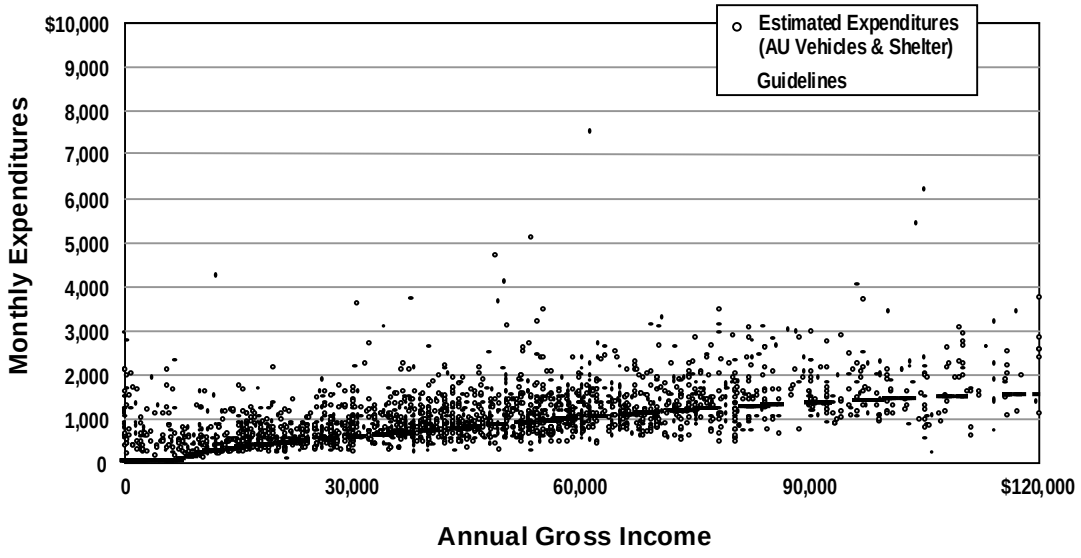
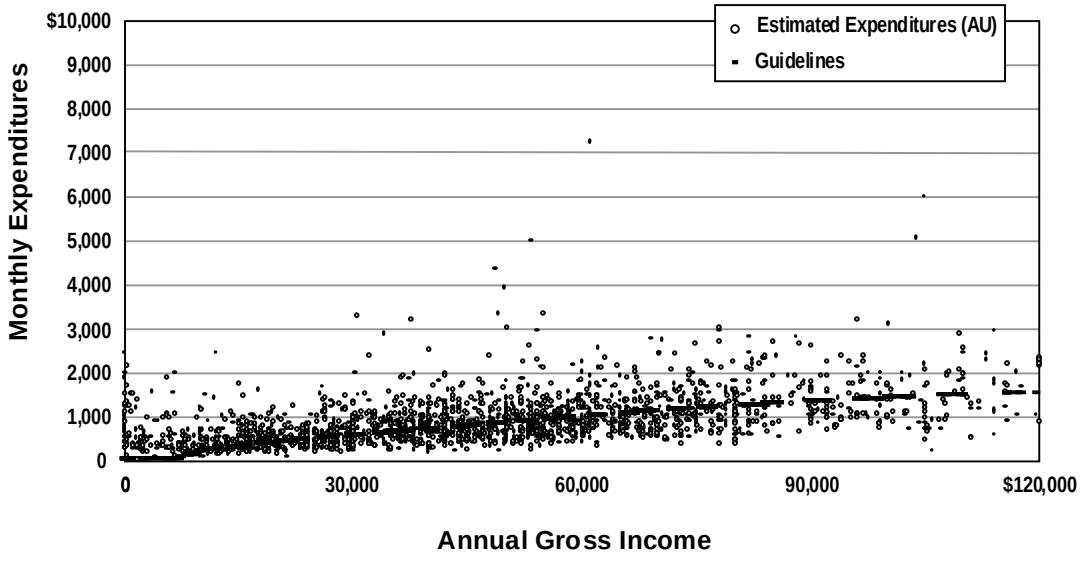


Figure 14

Child Support Guidelines and Estimated Household Expenditures on Children, Husband-Wife Households with Two Children

Average Use Approach (AU)



Source: JLARC staff analysis of 1997-1998 Consumer Expenditure Survey data.

Using Prevailing Estimated Expenditures to Determine Alternative Child Support Guidelines

The mandate for this study specified: "The Commission shall develop data that can be used to determine appropriate child support amounts." If a review panel or the General Assembly wishes to determine child support guideline amounts based on the expenditure estimates in this report, it could use prevailing expenditure curves, such as those shown in this chapter. Based on these curves, the alternative estimates of prevailing expenditures on children are shown in comparison to the current guideline amounts in Figures 15 through 20. However, several policy decisions need to be made regarding: (1) which set of curves to use, and (2) what adjustments could be made to ensure consistency in any guidelines derived from these curves.

Which Set of Curves to Use. As indicated earlier, some curves are better to use than others for technical reasons. For example, curves based on husband-wife households, compared to single-parent households, would be based on more complete expenditure and income data. Likewise, curves from husband-wife households with one, two, three, and four children appear to be based on samples of sufficient size to produce stable estimates. However, when comparing the four-children family cost curve with the three-children family curve, inconsistencies between the two (where the three-children curve has higher amounts than the four-children curve) indicate that basing guidelines on the four-children curve may cause some anomalies to occur.

The remaining question affecting which set of curves to use is essentially a policy question: what estimation method (per capita, average use,

or mix of the two) should be chosen? As illustrated in Figures 15 through 20. prevailing expenditure estimates based on the per capita approach would be substantially higher than the amounts in the current guidelines in all cases. At the same time, those based on the average use approach would generally be substantially higher among households earning less than $30,000, but substantially lower among households earning more than $60,000 per year. The advantages and disadvantages of applying the per capita versus the average use approach to each housing and transportation subcategory may need to be considered in making such a policy decision.

Adjustments to Promote Consistency in Guidelines. Consistency in the guidelines means that: (1) guideline amounts should not decrease as income increases; and (2) guideline amounts should not decrease as the number of children increases. Empirically-based curves for households with one, two or three children would result in consistent guidelines, but curves from those with four, five or six children would not. Therefore, an adjustment would need to be made as a policy decision in order to have guidelines for four-, five-, and six-children households that are consistent with each other and with guidelines for households with fewer children.

One way of making such an adjustment would be to use the three-children household curve as a baseline, and adjust it upward by a fixed proportion for four-children households, and by another (higher) proportion for five-children households, and by another (yet higher) proportion for six-children households. This approach is used in the current guidelines (with some

Figure 15

Prevailing Expenditures on Children and Child Support Guideline Amounts, Husband-Wife Households (One Child)

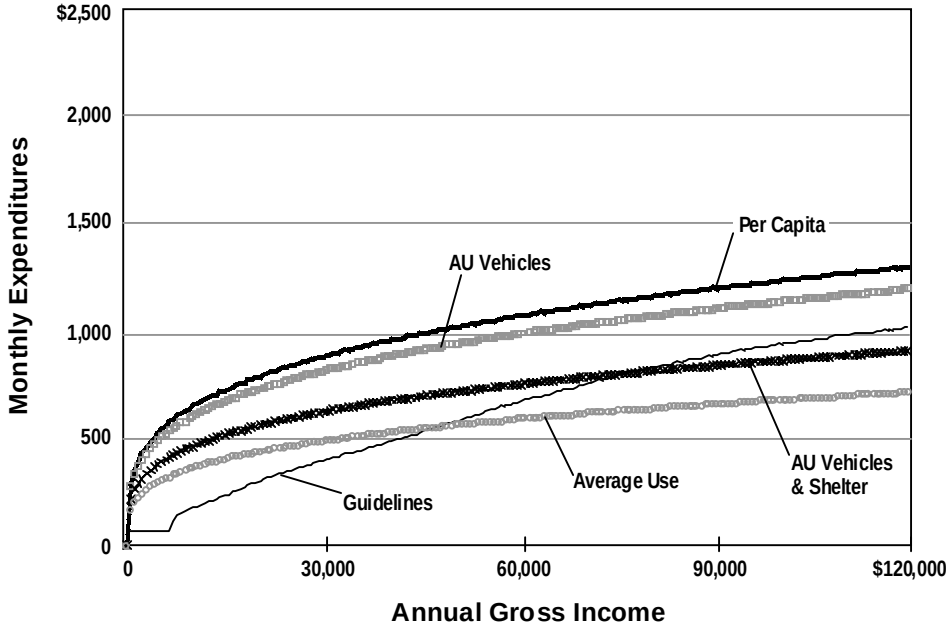
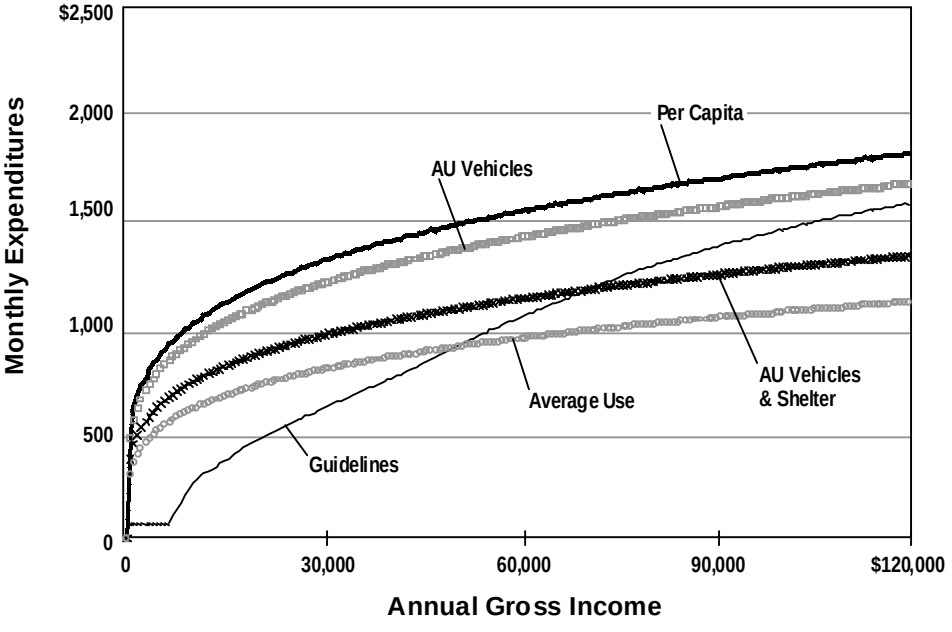


Figure 16

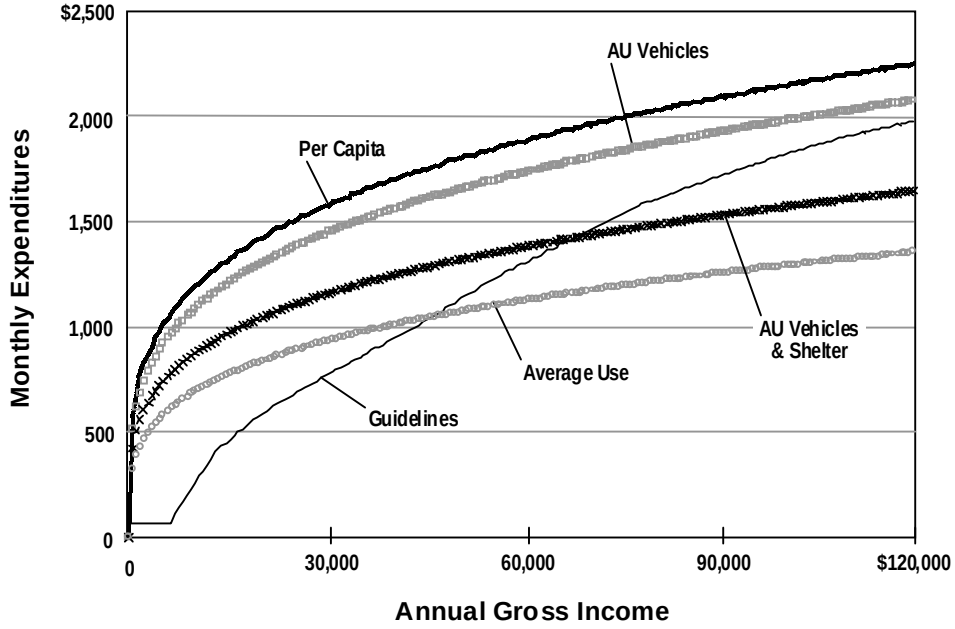
Prevailing Expenditures on Children and Child Support Guideline Amounts, Husband-Wife Households (Two Children)



Source: JLARC staff analysis of 1997-1998 Consumer Expenditure Survey data.

Figure 17

Expenditures on Children and Child Support Guideline Amounts Husband-Wife Households (Three Children)



Source: JLARC staff analysis of 1997-1998 Consumer Expenditure Survey data.

exceptions), in which the proportions are: .1274 for four-children households, .2293 for five-children households, and .3142 for six-children households. Figures 18 through 20 illustrate what alternative cost curves with this particular adjustment would look like. However, proportions other than the ones used by the current guidelines could serve as the basis for the adjustment instead.

CONCLUSIONS

Senate Joint Resolution 192 directed JLARC to examine "the costs of raising children in Virginia when parents live in separate households," and to "develop data that can [be] used to determine appropriate child support amounts." After analyzing currently available nationwide data on household

Figure 18

Illustrative Expenditure Curves
Four-Children Households
(Derived from Applying Fixed Proportion to Three-Children Household Curves)

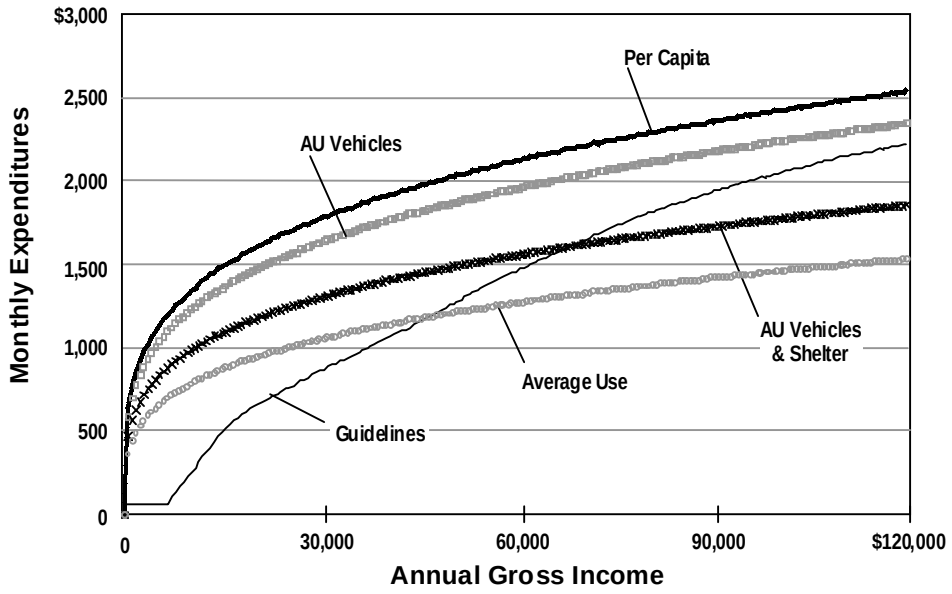
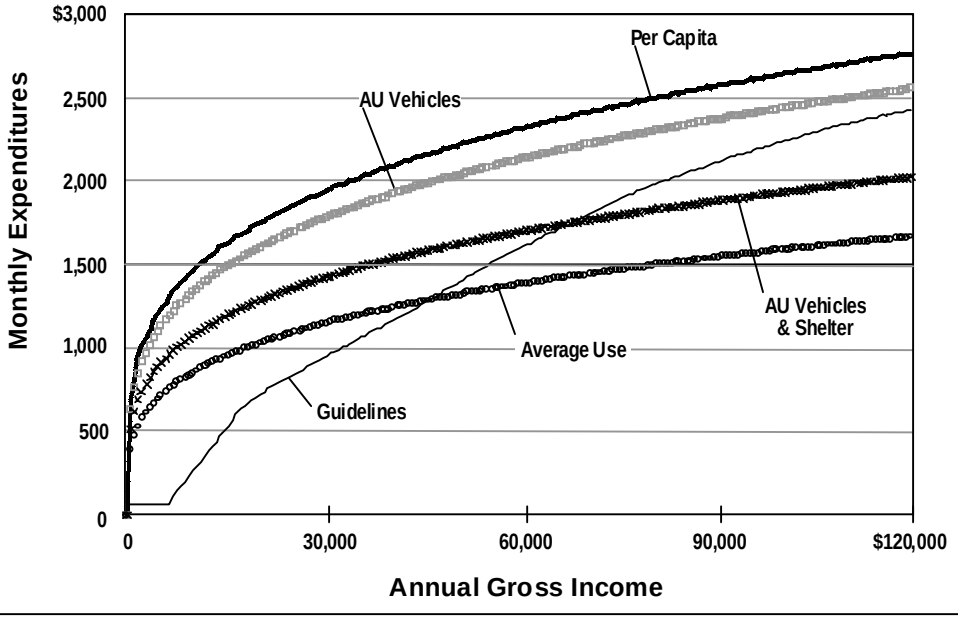


Figure 19

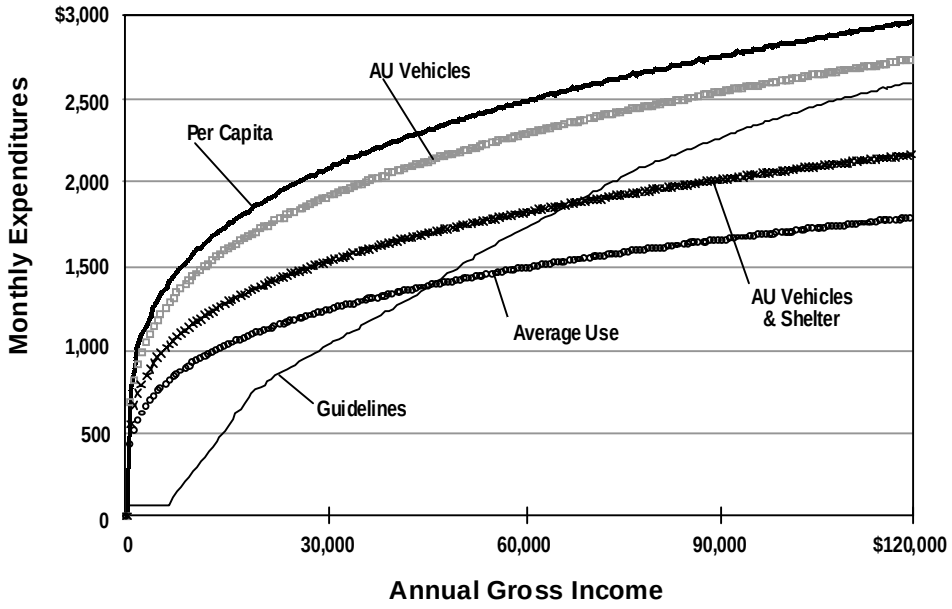
Illustrative Expenditure Curves
Five-Children Households
(Derived from Applying Fixed Proportion to Three-Children Household Curves)



Source: JLARC staff analysis of 1997-1998 Consumer Expenditure Survey data.

Figure 20

Illustrative Expenditure Curves
Six-Children Households
(Derived from Applying Fixed Proportion to Three-Children Household Curves)



Source: JLARC staff analysis of 1997-1998 Consumer Expenditure Survey data.

expenditures (including data from single-parent households), JLARC staff conclude that it would not be cost-effective for the General Assembly to attempt a new, Virginia-specific data collection effort. Such an attempt to replicate the nationwide data within Virginia would be very expensive and problematic. Further, even if Virginia-specific data were collected, the results would probably not be significantly different from those based on nationwide data.

JLARC staff used nationwide data to examine estimated expenditures on children in single-parent households, in comparison to husband-wife households. Overall, when controlling for income level, single-parent households were not found to have expenditure levels that were vastly different from

husband-wife households. In some cases (such as one-child or two-children households), the level of spending in single-parent households was somewhat higher, when in other cases (such as three-children households) it was somewhat lower.

However, a more solid case can be made for basing Virginia child support guidelines on estimated expenditures from husband-wife households than from single-parent households. One reason is that husband-wife households appear to report more complete information regarding total expenditures and income from both parents, when the data may not be as complete from single (custodial) parent households. Another reason is that basing guidelines on husband-wife household data would be more consistent with Virginia's existing policy, which uses an income-shares approach for determining child support payments.

JLARC staff demonstrated how data used to estimate expenditures on children could be used to evaluate the current guidelines or to help determine new, alternative guidelines. Several findings from this analysis appear to be particularly salient. One is that, among households earning less than $30,000 annually, estimated spending on children generally appears to consistently exceed the amounts that are in the current guidelines. Another is that a key policy decision affecting the expenditure estimates is whether housing and transportation costs should be attributed to children on the basis of the per capita or the average use approach (or some combination of the two). Finally, having a set of expenditure estimates alone would not be sufficient to determine

appropriate child support amounts, because there is a need for additional policy decisions and adjustments to be made as well. However, using expenditure estimates as one of many components may help ensure that child support amounts realistically reflect the costs of raising children.

Recommendation (1). **The Commonwealth of Virginia should not initiate a new, Virginia-specific data collection effort on the costs of raising children. Instead, future Child Support Guideline Review Panels should use data collected from the most recent Consumer Expenditure Survey from the Bureau of Labor Statistics of the U.S. Department of Labor.**

Recommendation (2). **The Secretary of Health and Human Resources should direct the next Child Support Guideline Review Panel to include the following points in its deliberations when it considers the costs of raising children in evaluating or revising the guidelines. (a) It should consider basing Virginia child support guidelines on estimated expenditures from husband-wife households rather than from single-parent households. (b) It should consider whether the guidelines for families earning a combined gross income of less than $30,000 annually should be increased. (c) When estimating expenditures on children, it should consider whether housing and transportation costs should be attributed to children based on the per capita or the average use approach (or some combination of the two).**

Recommendation (3). **The Secretary of Health and Human Resources should direct the next Child Support Guideline Review Panel to consider what policy decisions or adjustments should be made in addition to expenditure estimates to determine appropriate child support amounts.**

Appendix A

Study Mandate

SENATE JOINT RESOLUTION NO. 192
2000 Session

Directing the Joint Legislative Audit and Review Commission to include in its study of child support enforcement an examination of the cost of raising children whose parents live in separate households.

WHEREAS, subsection H of § 20-108.2 of the Code of Virginia requires the Secretary of Health and Human Resources to convene a panel to review the child support guideline set out in that section every four years; and

WHEREAS, the panel is charged with determining the adequacy of the guideline for the determination of appropriate awards for the support of children by considering current research and data on the cost of and expenditures necessary for rearing children; and

WHEREAS, thousands of Virginia's children live with only one parent and are dependent on child support to meet their daily needs; and

WHEREAS, Virginia's child support guideline is based on the premise that the child should receive the same proportion of parental income that the child would have received if the parents lived together; and

WHEREAS, the basic economic data on which the guideline is based are derived from overall expenditures in intact families; and

WHEREAS, there are no valid data currently available that address the cost of raising children where parents live in separate households; and

WHEREAS, there is a need to develop such data in order to make a realistic determination of child support; and

WHEREAS, House Joint Resolution 137 from the 1998 Session and Item 16 H of the 1999 Appropriation Act require a Joint Legislative Audit and Review Commission review in the functional area of health and human resources; and

WHEREAS, the Commission has initiated a review of child support enforcement to help meet the HJR 137 and Item 16 mandates; now, therefore, be it

RESOLVED by the Senate, the House of Delegates concurring, That the Joint Legislative Audit and Review Commission be directed to include in its study of child support enforcement an examination of the costs of raising children in Virginia when parents live in separate households. The Commission shall develop data that can used to determine appropriate child support amounts.

Technical assistance for the study shall be provided by the Secretary of Health and Human Resources. All agencies of the Commonwealth shall provide assistance to the Commission, upon request.

The Joint Legislative Audit and Review Commission shall complete its work in time to submit its findings and recommendations to the Governor and the 2001 Session of the General Assembly as provided in the procedures of the Division of Legislative Automated Systems for the processing of legislative documents.

Appendix B

Current Child Support Guidelines

CODE OF VIRGINIA, SECTION 20-108.2

B. For purposes of application of the guideline, a basic child support obligation shall be computed using the schedule set out below. For combined monthly gross income amounts falling between amounts shown in the schedule, basic child support obligation amounts shall be extrapolated. However, unless one of the following exemptions applies where the sole custody child support obligation as computed pursuant to subdivision G 1 is less than $65 per month, there shall be a presumptive minimum child support obligation of $65 per month payable by the payor parent. Exemptions from this presumptive minimum monthly child support obligation shall include: parents unable to pay child support because they lack sufficient assets from which to pay child support and who, in addition, are institutionalized in a psychiatric facility; are imprisoned with no chance of parole; are medically verified to be totally and permanently disabled with no evidence of potential for paying child support, including recipients of Supplemental Security Income (SSI); or are otherwise involuntarily unable to produce income. "Number of children" means the number of children for whom the parents share joint legal responsibility and for whom support is being sought.

SCHEDULE OF

MONTHLY BASIC CHILD SUPPORT OBLIGATIONS

COMBINED MONTHLY GROSS INCOME	ONE CHILD	TWO CHILDREN	THREE CHILDREN	FOUR CHILDREN	FIVE CHILDREN	SIX CHILDREN
0-599	65	65	65	65	65	65
600	110	111	113	114	115	116
650	138	140	142	143	145	146
700	153	169	170	172	174	176
750	160	197	199	202	204	206
800	168	226	228	231	233	236
850	175	254	257	260	263	266
900	182	281	286	289	292	295
950	189	292	315	318	322	325
1000	196	304	344	348	351	355
1050	203	315	373	377	381	385
1100	210	326	402	406	410	415
1150	217	337	422	435	440	445
1200	225	348	436	465	470	475

1250	232	360	451	497	502	507
1300	241	373	467	526	536	542
1350	249	386	483	545	570	576
1400	257	398	499	563	605	611
1450	265	411	515	581	633	645
1500	274	426	533	602	656	680
1550	282	436	547	617	672	714
1600	289	447	560	632	689	737
1650	295	458	573	647	705	754
1700	302	468	587	662	721	772
1750	309	479	600	676	738	789
1800	315	488	612	690	752	805
1850	321	497	623	702	766	819
1900	326	506	634	714	779	834
1950	332	514	645	727	793	848
2000	338	523	655	739	806	862
2050	343	532	666	751	819	877
2100	349	540	677	763	833	891
2150	355	549	688	776	846	905
2200	360	558	699	788	860	920
2250	366	567	710	800	873	934
2300	371	575	721	812	886	948
2350	377	584	732	825	900	963
2400	383	593	743	837	913	977
2450	388	601	754	849	927	991
2500	394	610	765	862	940	1006
2550	399	619	776	874	954	1020
2600	405	627	787	886	967	1034
2650	410	635	797	897	979	1048
2700	415	643	806	908	991	1060
2750	420	651	816	919	1003	1073
2800	425	658	826	930	1015	1085
2850	430	667	836	941	1027	1098
2900	435	675	846	953	1039	1112
2950	440	683	856	964	1052	1125
3000	445	691	866	975	1064	1138
3050	450	699	876	987	1076	1152
3100	456	707	886	998	1089	1165
3150	461	715	896	1010	1101	1178
3200	466	723	906	1021	1114	1191
3250	471	732	917	1032	1126	1205
3300	476	740	927	1044	1139	1218

3350	481	748	937	1055	1151	1231
3400	486	756	947	1067	1164	1245
3450	492	764	957	1078	1176	1258
3500	497	772	967	1089	1189	1271
3550	502	780	977	1101	1201	1285
3600	507	788	987	1112	1213	1298
3650	512	797	997	1124	1226	1311
3700	518	806	1009	1137	1240	1326
3750	524	815	1020	1150	1254	1342
3800	530	824	1032	1163	1268	1357
3850	536	834	1043	1176	1283	1372
3900	542	843	1055	1189	1297	1387
3950	547	852	1066	1202	1311	1402
4000	553	861	1078	1214	1325	1417
4050	559	871	1089	1227	1339	1432
4100	565	880	1101	1240	1353	1448
4150	571	889	1112	1253	1367	1463
4200	577	898	1124	1266	1382	1478
4250	583	907	1135	1279	1396	1493
4300	589	917	1147	1292	1410	1508
4350	594	926	1158	1305	1424	1523
4400	600	935	1170	1318	1438	1538
4450	606	944	1181	1331	1452	1553
4500	612	954	1193	1344	1467	1569
4550	618	963	1204	1357	1481	1584
4600	624	972	1216	1370	1495	1599
4650	630	981	1227	1383	1509	1614
4700	635	989	1237	1395	1522	1627
4750	641	997	1247	1406	1534	1641
4800	646	1005	1257	1417	1546	1654
4850	651	1013	1267	1428	1558	1667
4900	656	1021	1277	1439	1570	1679
4950	661	1028	1286	1450	1582	1692
5000	666	1036	1295	1460	1593	1704
5050	671	1043	1305	1471	1605	1716
5100	675	1051	1314	1481	1616	1728
5150	680	1058	1323	1492	1628	1741
5200	685	1066	1333	1502	1640	1753
5250	690	1073	1342	1513	1651	1765
5300	695	1081	1351	1524	1663	1778
5350	700	1088	1361	1534	1674	1790
5400	705	1096	1370	1545	1686	1802

5450	710	1103	1379	1555	1697	1815
5500	714	1111	1389	1566	1709	1827
5550	719	1118	1398	1576	1720	1839
5600	724	1126	1407	1587	1732	1851
5650	729	1133	1417	1598	1743	1864
5700	734	1141	1426	1608	1755	1876
5750	739	1148	1435	1619	1766	1888
5800	744	1156	1445	1629	1778	1901
5850	749	1163	1454	1640	1790	1913
5900	753	1171	1463	1650	1801	1925
5950	758	1178	1473	1661	1813	1937
6000	763	1186	1482	1672	1824	1950
6050	768	1193	1491	1682	1836	1962
6100	773	1201	1501	1693	1847	1974
6150	778	1208	1510	1703	1859	1987
6200	783	1216	1519	1714	1870	1999
6250	788	1223	1529	1724	1882	2011
6300	792	1231	1538	1735	1893	2023
6350	797	1238	1547	1745	1905	2036
6400	802	1246	1557	1756	1916	2048
6450	807	1253	1566	1767	1928	2060
6500	812	1261	1575	1777	1940	2073
6550	816	1267	1583	1786	1949	2083
6600	820	1272	1590	1794	1957	2092
6650	823	1277	1597	1801	1965	2100
6700	827	1283	1604	1809	1974	2109
6750	830	1288	1610	1817	1982	2118
6800	834	1293	1617	1824	1990	2127
6850	837	1299	1624	1832	1999	2136
6900	841	1304	1631	1839	2007	2145
6950	845	1309	1637	1847	2016	2154
7000	848	1315	1644	1855	2024	2163
7050	852	1320	1651	1862	2032	2172
7100	855	1325	1658	1870	2041	2181
7150	859	1331	1665	1878	2049	2190
7200	862	1336	1671	1885	2057	2199
7250	866	1341	1678	1893	2066	2207
7300	870	1347	1685	1900	2074	2216
7350	873	1352	1692	1908	2082	2225
7400	877	1358	1698	1916	2091	2234
7450	880	1363	1705	1923	2099	2243
7500	884	1368	1712	1931	2108	2252

7550	887	1374	1719	1938	2116	2261
7600	891	1379	1725	1946	2124	2270
7650	895	1384	1732	1954	2133	2279
7700	898	1390	1739	1961	2141	2288
7750	902	1395	1746	1969	2149	2297
7800	905	1400	1753	1977	2158	2305
7850	908	1405	1758	1983	2164	2313
7900	910	1409	1764	1989	2171	2320
7950	913	1414	1770	1995	2178	2328
8000	916	1418	1776	2001	2185	2335
8050	918	1423	1781	2007	2192	2343
8100	921	1428	1787	2014	2198	2350
8150	924	1432	1793	2020	2205	2357
8200	927	1437	1799	2026	2212	2365
8250	929	1441	1804	2032	2219	2372
8300	932	1446	1810	2038	2226	2380
8350	935	1450	1816	2045	2232	2387
8400	937	1455	1822	2051	2239	2395
8450	940	1459	1827	2057	2246	2402
8500	943	1464	1833	2063	2253	2410
8550	945	1468	1839	2069	2260	2417
8600	948	1473	1845	2076	2266	2425
8650	951	1478	1850	2082	2273	2432
8700	954	1482	1856	2088	2280	2440
8750	956	1487	1862	2094	2287	2447
8800	959	1491	1868	2100	2294	2455
8850	962	1496	1873	2107	2300	2462
8900	964	1500	1879	2113	2307	2470
8950	967	1505	1885	2119	2314	2477
9000	970	1509	1891	2125	2321	2484
9050	973	1514	1896	2131	2328	2492
9100	975	1517	1901	2137	2334	2498
9150	977	1521	1905	2141	2339	2503
9200	979	1524	1909	2146	2344	2509
9250	982	1527	1914	2151	2349	2514
9300	984	1531	1918	2156	2354	2520
9350	986	1534	1922	2160	2359	2525
9400	988	1537	1926	2165	2365	2531
9450	990	1541	1930	2170	2370	2536
9500	993	1544	1935	2175	2375	2541

9550	995	1547	1939	2179	2380	2547
9600	997	1551	1943	2184	2385	2552
9650	999	1554	1947	2189	2390	2558
9700	1001	1557	1951	2194	2396	2563
9750	1003	1561	1956	2198	2401	2569
9800	1006	1564	1960	2203	2406	2574
9850	1008	1567	1964	2208	2411	2580
9900	1010	1571	1968	2213	2416	2585
9950	1012	1574	1972	2218	2421	2590
10000	1014	1577	1977	2222	2427	2596

For gross monthly income between $10,000 and $20,000, add the amount of child support for $10,000 to the following percentages of gross income above $10,000:

ONE CHILD	TWO CHILDREN	THREE CHILDREN	FOUR CHILDREN	FIVE CHILDREN	SIX CHILDREN
3.1%	5.1%	6.8%	7.8%	8.8%	9.5%

For gross monthly income between $20,000 and $50,000, add the amount of child support for $20,000 to the following percentages of gross income above $20,000:

ONE CHILD	TWO CHILDREN	THREE CHILDREN	FOUR CHILDREN	FIVE CHILDREN	SIX CHILDREN
2%	3.5%	5%	6%	6.9%	7.8%

For gross monthly income over $50,000, add the amount of child support for $50,000 to the following percentages of gross income above $50,000:

ONE CHILD	TWO CHILDREN	THREE CHILDREN	FOUR CHILDREN	FIVE CHILDREN	SIX CHILDREN
1%	2%	3%	4%	5%	6%

Appendix C

Excel Functions Used to Generate Curves Representing Prevailing Expenditures on Children

The prevailing household spending level was calculated with the regression estimates produced from the Consumer Expenditure Survey. These regression estimates were repeated for four child-cost allocation approaches. These approaches are the per capita, average use applied to vehicle spending, average use applied to vehicle and shelter spending, and average use applied to all transportation and housing categories. The regression equations were fit against log-transformed data that had been adjusted for the relevant cost allocation approach. The resulting estimates were then used to fit spending curves for each child cost allocation method and each stratum of family composition.

The functions are presented in the following form:

=exp(a + b(ln(income)))

where “a” is the intercept from the regression model, “b” is the coefficient from the regression of the log of income, and “ln(income)” converts a real dollar income level to logarithmic form. The “=exp” function converts the logarithmic values of the regression equation back into real values. ***It should be noted that the functions assume annual gross income as the independent variable, and estimate monthly prevailing expenditures.***

Table C.1 **Excel Formulas Used to Generate Prevailing Expenditures on Children**	
Spending Under the Per Capita Approach	
Household Composition	Formula
1 Parent 1 Child	=exp(2.949+0.386ln(income)))
1 Parent 2 Children	=exp(4.352+0.280ln(income)))
1 Parent 3 Children	=exp(4.178+0.303ln(income)))
1 Parent 4 Children	=exp(5.688+0.140ln(income)))
1 Parent 5 Children	=exp(6.276+0.086ln(income)))
1 Parent 6 Children	=exp(5.641+0.147ln(income)))
2 Parent 1 Child	=exp(3.880+0.281ln(income)))
2 Parent 2 Children	=exp(4.733+0.237ln(income)))
2 Parent 3 Children	=exp(4.705+0.258ln(income)))
2 Parent 4 Children	=exp(6.489+0.100ln(income)))
2 Parent 5 Children	=exp(3.871+0.347ln(income)))
2 Parent 6 Children	=exp(1.217+0.599ln(income)))

Table C.2 **Excel Formulas Used to Generate Prevailing Expenditures on Children**	
Spending Under the Average Use Vehicle Approach	
Household Composition	Formula
1 Parent 1 Child	=exp(3.101 + 0.363(ln(income)))
1 Parent 2 Children	=exp(4.394 + 0.269(ln(income)))
1 Parent 3 Children	=exp(4.396 + 0.273(ln(income)))
1 Parent 4 Children	=exp(5.719 + 0.132(ln(income)))
1 Parent 5 Children	=exp(6.232 + 0.088(ln(income)))
1 Parent 6 Children	=exp(5.604 + 0.149(ln(income)))
2 Parent 1 Child	=exp(3.829 + 0.278(ln(income)))
2 Parent 2 Children	=exp(4.626 + 0.239(ln(income)))
2 Parent 3 Children	=exp(4.568 + 0.262(ln(income)))
2 Parent 4 Children	=exp(6.389 + 0.104(ln(income)))
2 Parent 5 Children	=exp(4.161 + 0.310(ln(income)))
2 Parent 6 Children	=exp(1.765 + 0.539(ln(income)))

Table C.3 **Excel Formulas Used to Generate Prevailing Expenditures on Children** **Spending Under the Average Use Vehicle and Shelter Approach**	
Household Composition	Formula
1 Parent 1 Child	=exp(2.843 + 0.359ln(income)))
1 Parent 2 Children	=exp(3.960 + 0.287ln(income)))
1 Parent 3 Children	=exp(3.885 + 0.302ln(income)))
1 Parent 4 Children	=exp(5.480 + 0.132ln(income)))
1 Parent 5 Children	=exp(5.913 + 0.100ln(income)))
1 Parent 6 Children	=exp(5.971 + 0.088ln(income)))
2 Parent 1 Child	=exp(3.627 + 0.272ln(income)))
2 Parent 2 Children	=exp(4.391 + 0.239ln(income)))
2 Parent 3 Children	=exp(4.403 + 0.257ln(income)))
2 Parent 4 Children	=exp(6.143 + 0.106ln(income)))
2 Parent 5 Children	=exp(3.966 + 0.306ln(income)))
2 Parent 6 Children	=exp(2.384 + 0.460ln(income)))

Table C.4 **Excel Formulas Used to Generate Prevailing Expenditures on Children** **Spending Under the Average Use Approach**	
Household Composition	Formula
1 Parent 1 Child	=exp(2.486 + 0.367ln(income)))
1 Parent 2 Children	=exp(3.702 + 0.291ln(income)))
1 Parent 3 Children	=exp(3.557 + 0.311ln(income)))
1 Parent 4 Children	=exp(5.474 + 0.110ln(income)))
1 Parent 5 Children	=exp(5.610 + 0.114ln(income)))
1 Parent 6 Children	=exp(5.761 + 0.090ln(income)))
2 Parent 1 Child	=exp(3.336 + 0.276ln(income)))
2 Parent 2 Children	=exp(4.154 + 0.245ln(income)))
2 Parent 3 Children	=exp(4.036 + 0.272ln(income)))
2 Parent 4 Children	=exp(5.928 + 0.106ln(income)))
2 Parent 5 Children	=exp(3.628 + 0.318ln(income)))
2 Parent 6 Children	=exp(1.765 + 0.500ln(income)))

Appendix D

Agency Response

SEP 29 2000

COMMONWEALTH of VIRGINIA

DEPARTMENT OF SOCIAL SERVICES

SEP 29 2000

Mr. Philip A. Leone
Director, Joint Legislative Audit and Review Commission
Suite 1100, General Assembly Building, Capitol Square
Richmond, Virginia 23219

Dear Mr. Leone:

Thank you for the opportunity to comment on the exposure draft of your technical report, *The Costs of Raising Children*. Greg Rest of your staff has given Department staff a good briefing on the methodology and outcome, which we find very helpful in reviewing and reacting to the report draft.

As stated in the report, Senate Joint Resolution 192 of the 2000 General Assembly session, which directed this study, grew out of a recommendation from the 1998-1999 child support guideline review panel of the Secretary of Health and Human Resources. The recommendation was that the Assembly authorize and fund a Virginia-specific study of the cost of raising children in "non-intact families," to be used as the basis for the next review of the guideline. Because of other legislative action during the 2000 session, that next review is to occur in 2001, and triennially thereafter.

The Department's overall reaction to the draft report is highly favorable – though, as the draft notes on page 5, "For the 1999 review panel to obtain fully what it said it wanted in its report, the General Assembly would probably have to spend millions of dollars to collect valid expenditure data..." The issue is whether it is essential to have Virginia-specific data. The corollary question, if getting this data would be cost-prohibitive, is whether available national information approximates Virginia closely enough to be used or adapted for producing an improved child support guideline schedule to replace the one now in Code Section 20-108.2B.

The exposure draft answers the latter question in the affirmative. In general, the Department agrees. We believe the report provides a very good basis for the Secretary's 2001 guideline panel to develop a revised guideline schedule for consideration in the 2002 General Assembly session.

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The actual table could be developed relatively inexpensively, using in-state expertise. For example, the University of Virginia has done extensive research in this area and consulted with the 1995-1996 panel; there likely are also other similarly qualified state universities.

Subsequent to Mr. Rest's briefing, Departmental staff have considered possibilities for adapting the three sets of data considered by JLARC staff, both to Virginia specifically and to child support enforcement program characteristics. Assuming the adoption of the report by the Commission in substantially its present form, we believe we can work with those possibilities in exploring ways the national data might be "tweaked" without undue effort or cost. In general, however, we agree with JLARC that following your recommended approach should yield both an improved guideline schedule and provide enhanced credibility of the product in the eyes of both parents and practitioners affected by child support enforcement in the Commonwealth.

Sincerely,

Sonia Rivero

Sonia Rivero
Commissioner

c: The Honorable Claude A. Allen
Secretary of Health and Human Resources